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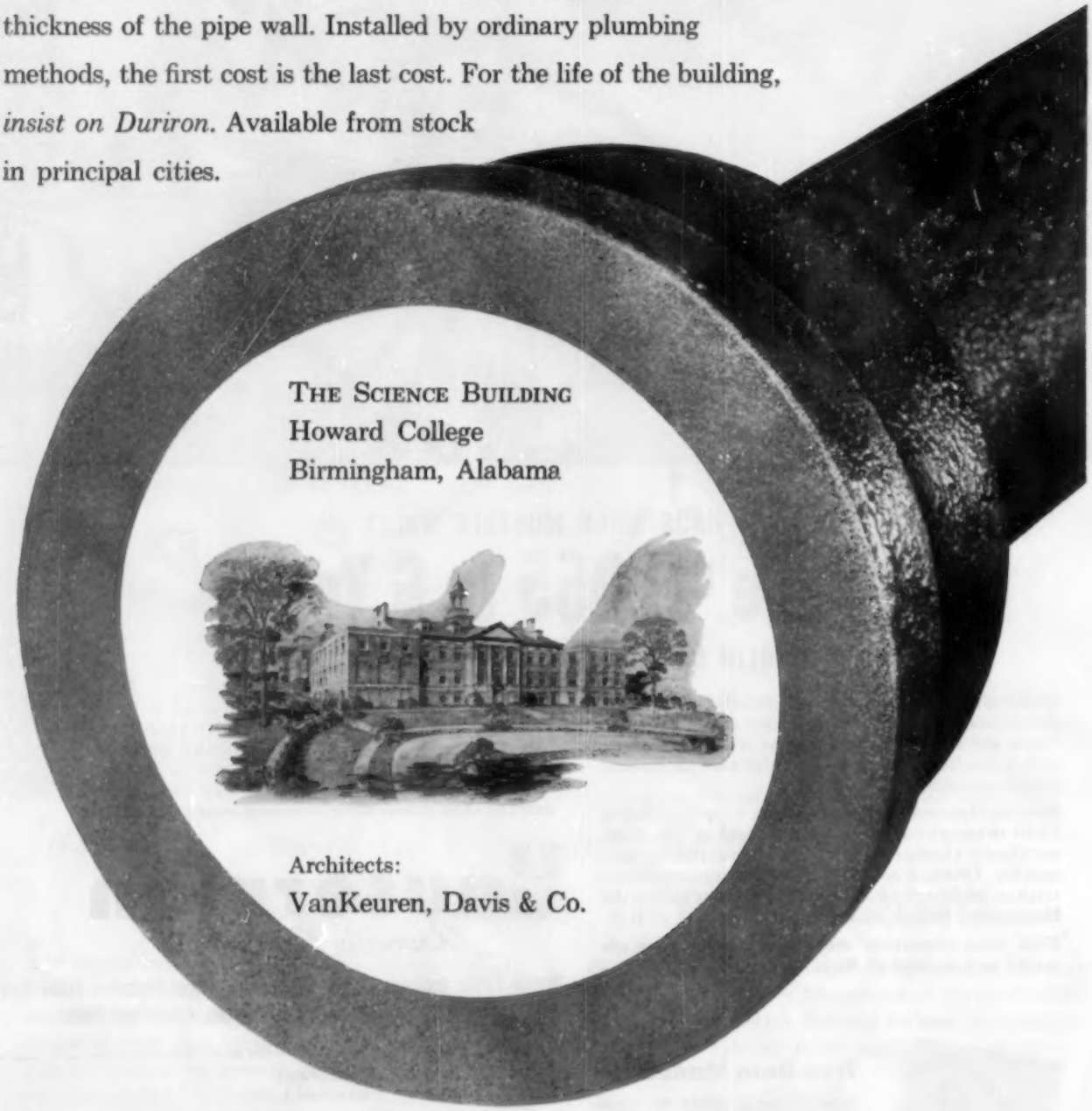

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July 1955

Edward C. Kemper Award for service to AIA was presented last month at Minneapolis Convention to Turpin C. Bannister, FAIA, for final editing of "The Architect at Mid-Century: Evolution and Achievement." Reinhold Publishing Corporation received Citation of Honor for publishing this two-volume Report of Commission for Survey of Education and Registration.

New AIA officers, elected at Convention, are: President, George Bain Cummings; First Vice-President, Earl T. Heitschmidt; Second Vice-President, John N. Richards; Secretary, Edward L. Wilson; Treasurer, Leon Chatelain.

Additional news from Convention: Board appropriated $3000 for study of aptitude testing in architecture. . . . Delegates voted special study of younger architect and the Institute. . . . Request for more competitions on public buildings was voted down. . . . Possibility of college-level training for building-industry personnel under egis of architectural schools will be explored. . . . Log book for apprenticeship system was approved. . . . Resolution for national-officer elections by mail ballot of all members was again vetoed. . . . "Dignified" use of architect's photo in advertising will be allowed.

Philip C. Johnson received Grand Festival Architectural Award—given by Boston Arts Festival for most outstanding architectural project built in New England within past five years. Winner was his Administration Building for Schlumberger Well Surveying Corp., Ridgefield, Conn., and Johnson also won Awards of Merit for two houses in New Canaan, Conn. Three other Merit Awards went to Hugh Stubbins Associates for house in Brockton, Mass., and to The Architects Collaborative for elementary school, Taunton, and church building, Natick, Mass.

"Homes for Korea" sponsors ask American building industry to take the lead in showing Koreans how to replace war-destroyed houses with mass-produced homes suited to country's customs, needs, and economy. The American-Korean Foundation, Inc., 270 Park Ave., New York 17, requests contributions of money, materials, equipment, or on-the-job technical assistance to provide housing designs, build modern pilot villages, and train native building industry.

New York designer, Jay Doblin, will assume leadership of Institute of Design in September when it moves to new building on IIT campus. . . . Kansas State College announces appointment of Emil C. Fischer as head of Department of Architecture and Allied Arts, effective July 1. . . . Harlan E. McClure will head Department of Architecture at Clemson College, starting this month. . . . Harwell Hamilton Harris has resigned as Dean of School of Architecture, University of Texas.

THE SCHOOL EXECUTIVE announces competition for best educational buildings of 1955 in U.S. or Canada. For entry blanks and program: Walter D. Cocking, THE SCHOOL EXECUTIVE, 470 Fourth Ave., New York 16. . . . U.S.A. TOMORROW's competition for redevelopment of New York's commercial district closes Sept. 30. For information: U.S.A. TOMORROW, Manhattan Redevelopment Competition, 210 Fifth Ave., Rm. 402, New York 10. . . . American Hospital Association is accepting entries for exhibition of health facilities built since 1950 to be shown at annual convention Sept. 19-22. For entry forms: Architectural Exhibit, American Hospital Assn., 18 E. Division St., Chicago 10.

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newsletter

Ewing Galloway

Frederick Gutheim Washington Perspective

Although the American Institute of Architects in 1937 had voted its opposition to extension of the east front of the United States Capitol, its lack of response to the sudden action of the House in May authorizing this change led me to assume that there was no architectural interest in this subject today. As I was hesitating over the usefulness of writing about it, my judgment was firmed by no less an authority than Lorimer Rich, FAIA, fresh from a long, salubrious interview with Speaker Sam Rayburn on this subject. If the newly proposed desecration of the work of Thornton, Latrobe, and Bulfinch is halted, I am confident it will be the result of this providential conference.

The revived proposal to extend the east front of the Capitol originates in a need for more restaurant space. Some additional offices also would be provided, and probably a direct connection between the Senate and House chambers at the gallery level. But it would not be inaccurate to describe the project as a $7,500,000 restaurant. What the new "Architect of the Capitol," J. George Stewart, may be directed to do is to move the original central portion out 40 feet. The action appears to be based on legislation passed by the Senate in 1937, discussed in two admirable articles in "The Octagon" that year by Egerton Swartwout and Leicester B. Holland.

Swartwout reviewed the architectural evolution of the Capitol, but concentrated especially on the complaint that Walter's large dome appears to overhang the east front. He commented, "Few visitors to Washington have not heard of this defect; it is so unusual that it has become a point of interest, a kind of joke. And it is a joke, and an unnecessary joke, on the Government of the richest and most powerful country in the world. It is bad enough to have visitors from foreign countries discover that our beautiful dome is not a real dome, but a cast-iron imitation of a stone dome; but when they see that this dome of ours, in which we have so much pride, has really no visible means of support, it ceases to become a joke. It is a tragedy."

Holland's calm and witty argument was on the preservation issue, and left no doubt that in the east front is concentrated all that remains of the contribution of Thornton, Latrobe, and Bulfinch. He coined a new word for the overhang issue, calling it "the monumental snivy." He wrote that "this discrepancy shows clearly in a section of the building, but actually in elevation it is very hard to see. Only from points far around to the side and close to the face of the building is it apparent. I doubt if anyone ever noticed it unless it was called to his attention. Yet this is the much discussed 'overhang of the dome' which has served as the ostensible reason for later proposed additions to the façade."

Nothing material need be added to this debate of 18 years ago, won conclusively in my judgment by those wishing to preserve the east front, with its attractive shallow court, and its soaring lines of portico, pediment, and dome which always furnish such an architectural appetizer in the long waits of Presidential Inaugurations. What should be considered today is how the needs of Congress can be accommodated without destroying our architectural heritage.

The main Congressional expansion has been met by erecting new buildings and this is the direction in which Congress should grow. In the Capitol itself, the Senate and House chambers were comprehensively reconstructed only five years ago. What is needed now is a better separation of millions of tourists, visiting a national shrine, from legislators conducting the nation's business. In this general problem, the restaurant needs of Congress are but a single detail. The Capitol and Congress are in the grip of the motor age, whether it is the strangulation of the Capitol grounds by literally hundreds of tourist buses and thousands of private cars or the saturation of the Capitol's corridors and public rooms by the tourists who come there in those vehicles.

Serious problems, these, but not so difficult that Congress should despair and talk (as some Senators have been talking seriously this year) of abandoning the Capitol itself to tourists as an historic monument—and taking their legislative work to some wholly new building. With a little tidying up of the circulation and some zoning of parts of the building for the two conflicting groups, the Capitol can easily be made an agreeable working place. The west front, overlooking the Mall, could be the site of one of the world's most spectacular restaurants! And worth exploring is the possibility of further extensions of the Capitol, north and south, on Walter's expansion principle.

Any of these possibilities would avoid the destruction of what is valuable and irreplaceable in our cultural history.

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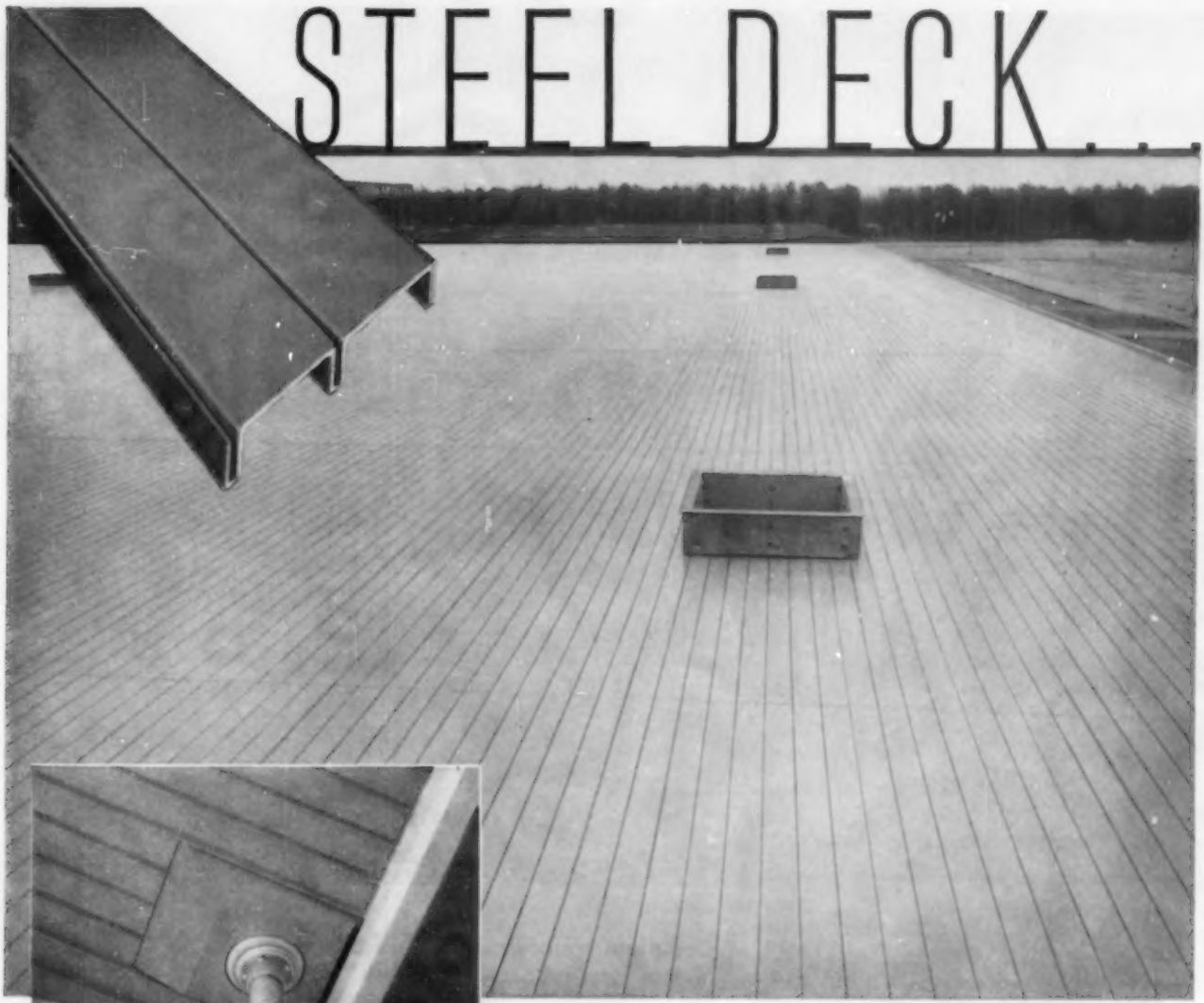

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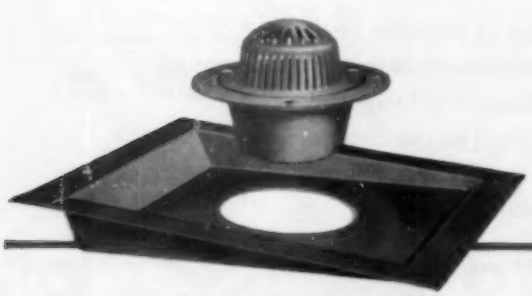

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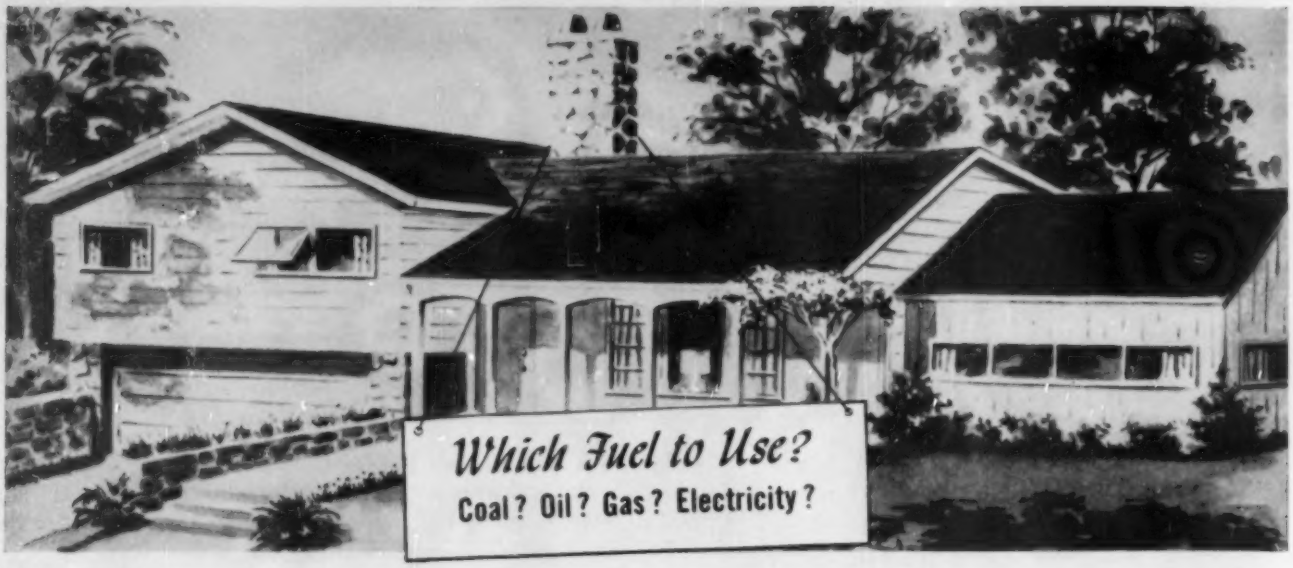

Even wood is still appropriate—in a cheerful fireplace; or charcoal in an outdoor grill. But for winter warmth, what fuel gives most comfort at least cost?

For summer coolness, shade trees are often relied on; also water evaporating on roofs. Electricity is widely used to operate mechanical cooling systems. How can its cost be reduced?

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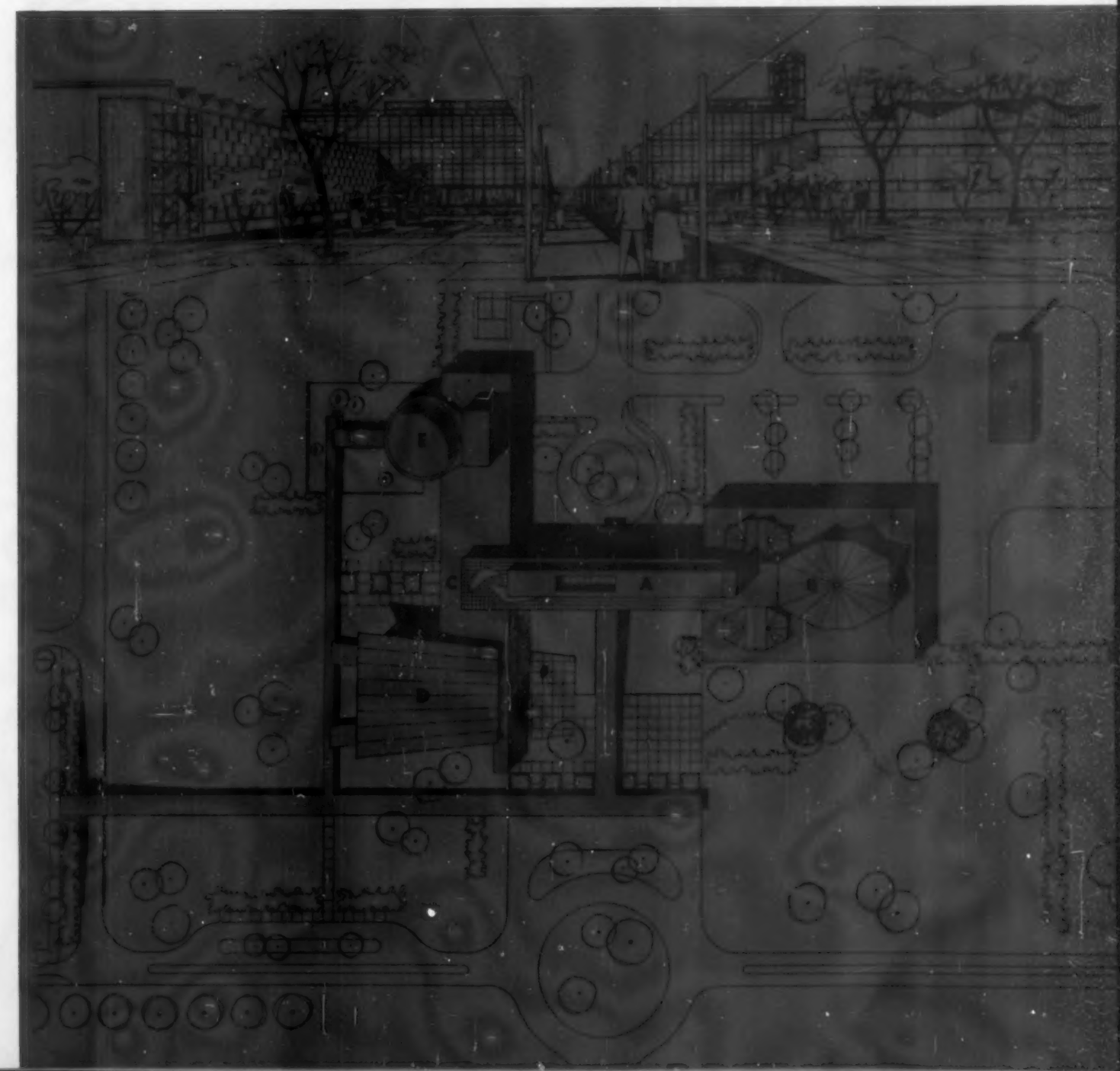
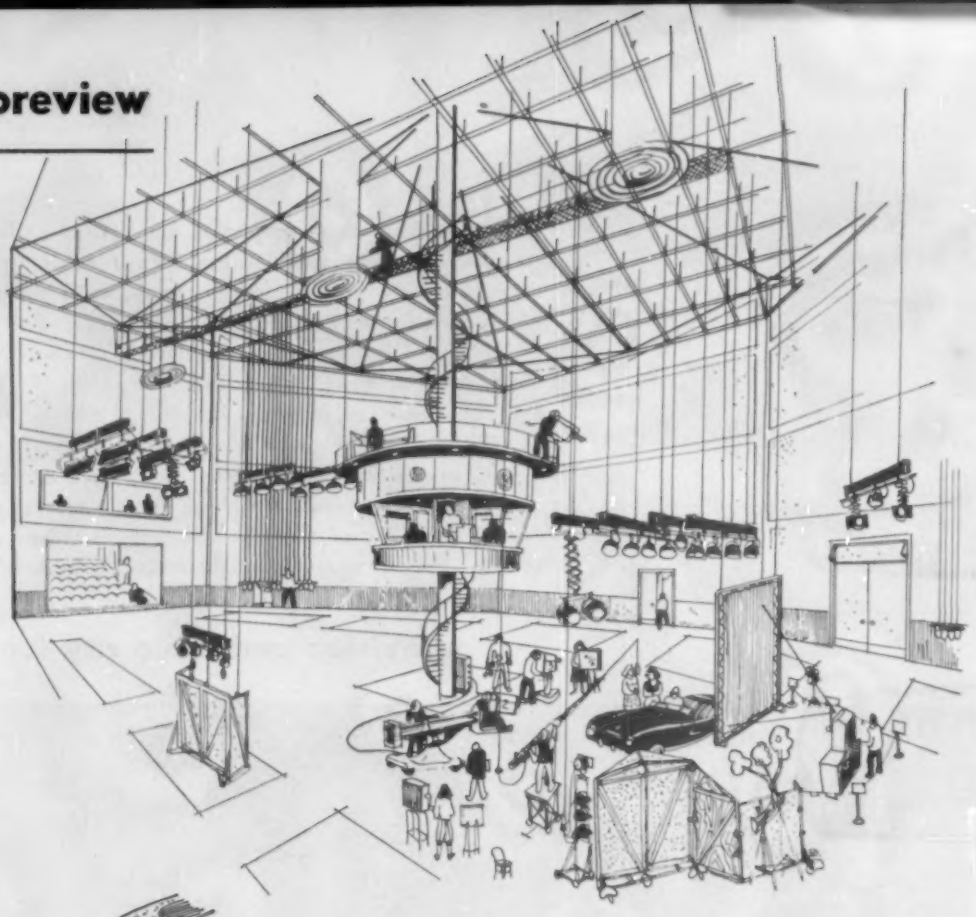
A suitable site near governmental, educational, and sport facilities has been selected for the proposed center, from which broadcasts and telecasts will originate and be transmitted to local and national audiences. Plans based on a carefully executed program study by Dr. Walter J. Duschinsky and Architects-Engineers Raymond & Rado, New York, have been submitted to the President of Republic of Colombia for approval. Local architects collaborating on this project are Cuellar, Serrano & Gomez. The flat and generous site will permit horizontal development, which is most economical and efficient to operate and construct. The six building elements of the center are: A. Administration; B. Television Studios; C. Radio Studios; D. Concert Hall; E. Dramatic Stage; F. Utilities. Since noise penetration into the operational areas must be prevented, all buildings, except Administration *(center of drawing below)* have a minimum of window openings.

Rendering: D. Leavitt

television and radio city for Bogota, Colombia



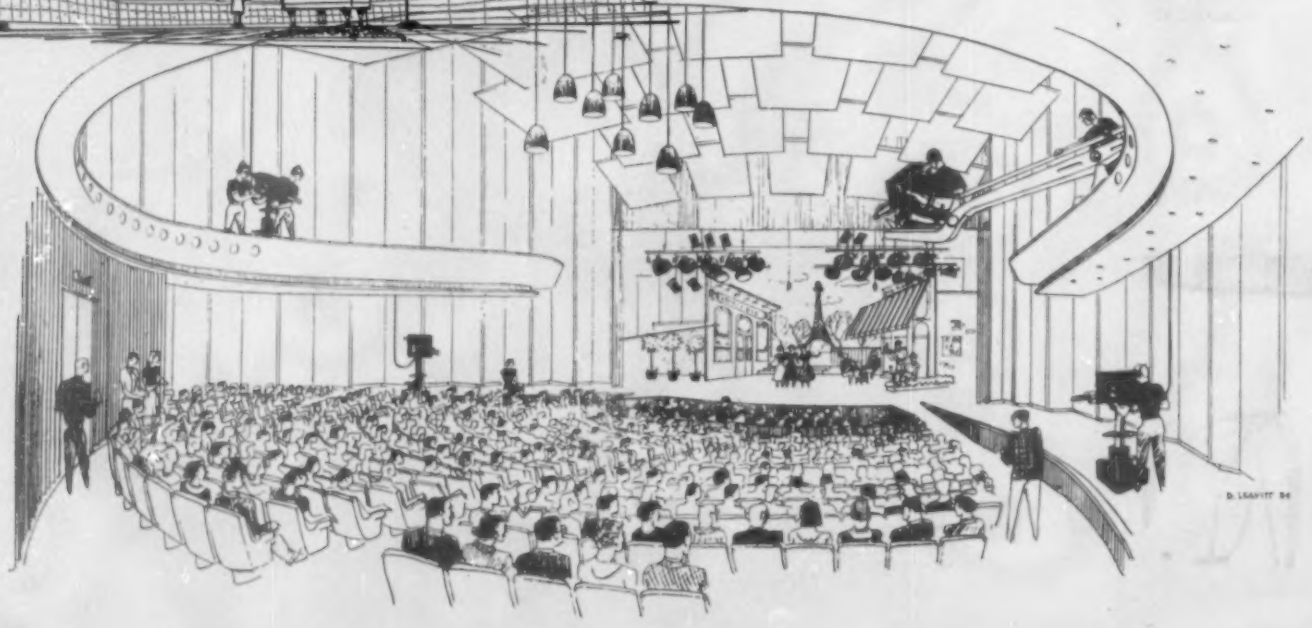


A giant studio (above) *and smaller studio and camera rehearsal area in the Television building will occupy roughly 50 percent of the total floor area. Internal circulation has been carefully studied to separate visitor traffic from the auditorium of the large studio.*

Radio Studios (left) *will also be at ground level. Instrument and conference studios will be of double height, and special shape, for effective sound interpretation. Technical, production, and talent traffic has been clearly separated.*

Sketches: Dr. Walter J. Duschinsky

Dramatic Stage (below) *acts as an originating facility for TV and radio pick-up. Circular shape of the theater, high camera runways, and use of two stage cars will assist in effective TV operation. Production and scheduling offices are in the administration building.* Sketch: D. Leavitt



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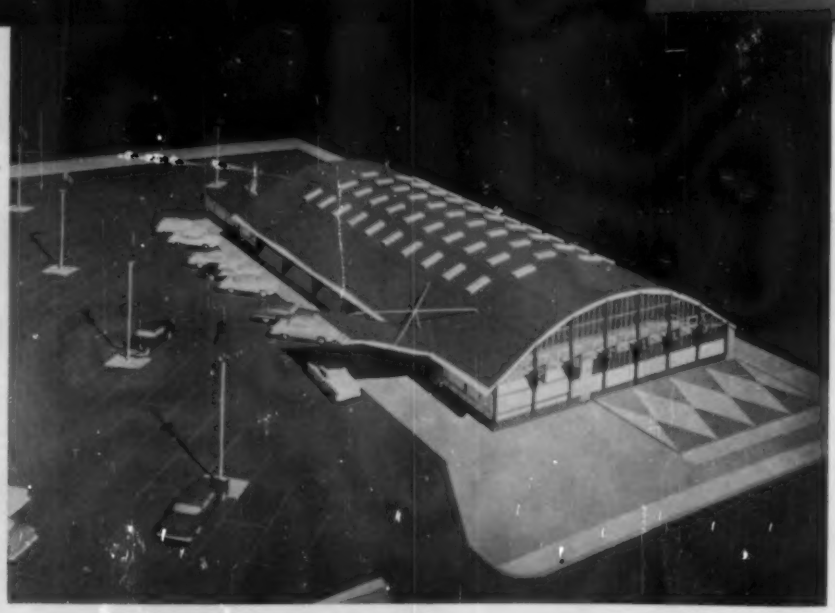
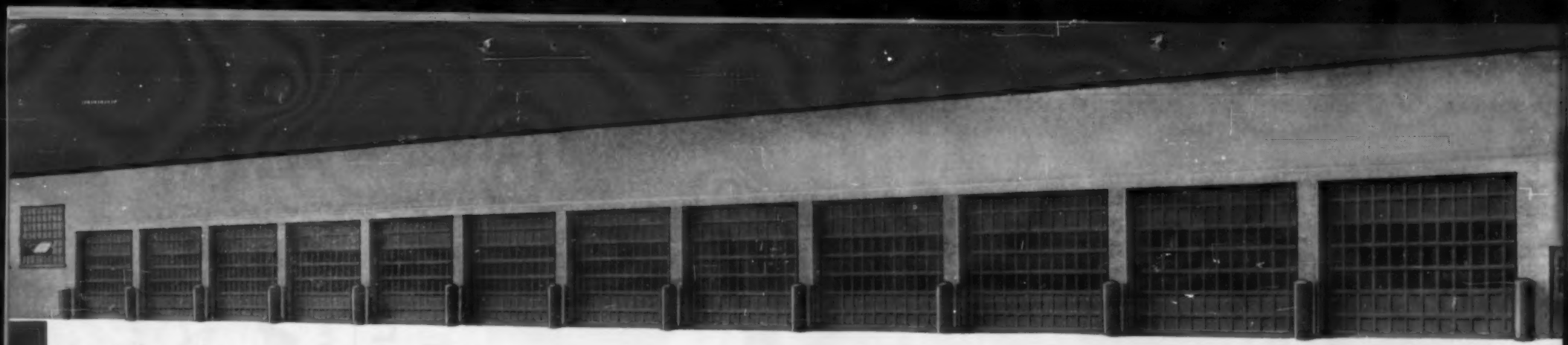


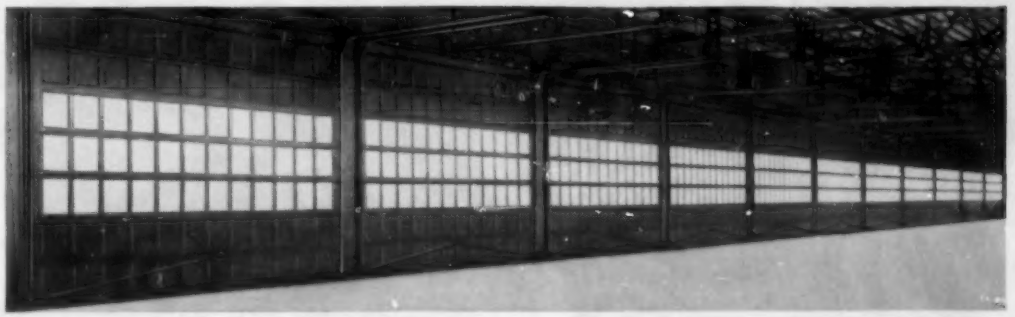
prototype of supermarket

Purity Stores Ltd. owns, operates more than 100 supermarkets in Northern California Bay Region. A new store which will serve as a pilot model for subsequent supermarkets to be constructed by this firm has been designed by Harry Weese, Chicago architect. Harold Engle is the structural engineer and Don A. Younger, the general contractor. It was the clients' desire, under the guidance of J. R. Niven as the company's chief executive, to adhere to a vaulted type of construction, which had proved successful in providing an uncluttered and spacious interior. The client wanted further emphasis placed on the effective and simple display of merchandise, without irrelevant trappings or sales gimmicks, and on the provision of plenty of fresh air and sunlight. The building will be consistent in plan but may vary from a curved roof (*photo above*) to a pitched roof (*elevation below*). The structure employs three-hinged steel arches placed 20 ft on centers; 3″x8″ purlins 2 ft on centers; ½″ plywood sheathing; porcelain-enamel panels set into wood-mullions with anodized cover strips. Skylights of translucent glass introduce light into the center of the building. Three-dimensional signs attached to the exterior of the end wall are of plastic and are designed to be illuminated. Five of these stores, each measuring 10,000 sq ft, are presently under construction.

Photo: Hedrich-Blessing



NATIONAL FOOD STORES MILWAUKEE DISTRIBUTION CENTER speeds heavy truck traffic with 19 Crawford Industrial Doors equipped with Electric Operators



National Tea Co. branch office and warehouse in Milwaukee is a typical modern industrial structure in which functional efficiency and good design are competently combined. The building is of steel and masonry construction and is 574 feet long, 399 feet wide and 16 feet high. It encloses approximately 230,000 square feet of floor space. As a branch warehouse for National Tea Co. which supplies all the merchandise for the National Food Stores in Wisconsin and Upper Michigan, it handles merchandise traffic up to 500 tons a day in about 100 vehicles.

To accommodate this traffic, the building is equipped with 12 — 18′0″ x 14′0″ and 7 — 12′0″ x 14′0″ Model SLA Crawford Marvel-Lift Industrial Doors, all equipped with electric operators with local and remote controls. Because of the sturdy construction of these doors and the cushioned operation achieved through the use of electric operators (always easier on doors than manual operation) these doors are in excellent condition after three years of constant use. If you have a door problem, we'll welcome your inquiry and it will get quick, intelligent attention.

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National Tea Co., Milwaukee, Wis.

Architect and Engineer: **Lefebvre & Wiggins, Milwaukee**

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President
Crawford Door Sales Co.
of Wisconsin

Crawford *MARVEL-LIFT* Doors

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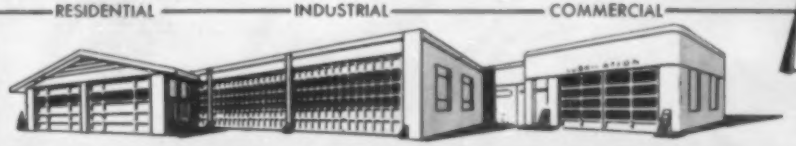

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P/A's June Account of Air Force Academy Design

Dear Editor: Thank you very much for your letter of the 24th attaching the report on design proposals for the Air Force Academy, published in the June issue of PROGRESSIVE ARCHITECTURE. I think the report is excellent. Unfortunately, the design of the chapel which has caused much comment is only a fill-in suggestion. No real design has been made for this.

I don't believe any construction in the United States has had such a large and strong group of architectural talent as has been assembled for the design of the Air Force Academy. In addition to Skidmore, Owings & Merrill; Robert & Company Associates; Syska & Hennessy, Inc.; and Moran, Proctor, Mueser & Rutledge, we have a group of consultants which I think are outstanding. Mr. Welton Becket of California, Mr. Eero Saarinen of Detroit, Michigan, and Mr. Pietro Belluschi, head of architecture at Massachusetts Institute of Technology. I am sure that this group of talent will be able to give this country a great design for our Air Force Academy.

H. E. TALBOTT
The Secretary of the Air Force

•

Dear Editor: Having sat in on several design seminars, I was particularly interested in your by-line report which I thought was very well done. I know that the two other personal consultants to Secretary of the Air Force Talbott join me in thanking you for mentioning the work of the consultants.

WELTON BECKET

•

Dear Editor: Congratulations on a fine job. I more than appreciate it.

NATHANIEL A. OWINGS
San Francisco, Calif.

•

Dear Editor: I am most pleased that you are so enthusiastic about our studies to date, and I assure you that it is most gratifying to read your comments.

GORDON BUNSHAFT

Dear Editor: Your article gives a fine comprehensive description of our plan. I'm pleased to see that you seem as enthusiastic about it as we are.

CAPT. THEODORE W. GOODMAN, USAF
Press Officer

•

Dear Editor: Needless to say, everyone here in the Agency and with Skidmore, Owings & Merrill, were extremely pleased with your report. It arrived at just about the same time Frank Lloyd Wright expressed his opinion and had a great deal of effect in counterbalancing Mr. Wright's criticisms.*

CAPT. GEORGE F. HENNRIKUS, JR.
Information Services Officer
Colorado Springs, Colo.

** The following letter, referred to above by Captain Hennrikus, appeared in* The Free Press *of Colorado Springs, May 27, 1955, and is reprinted with permission of the City Editor:*

Mr. Harold M. Wynne
City Editor
The (Colorado Springs) Free Press
Colorado Springs
Colorado

My dear Harold Wynne: The Air Force Academy looks to me as if another factory had moved in where it ought not to be. The place will probably be known as Talbott's Aviary or, more realistically, a factory for birdmen. Talbott may be a nice man up in his job, probably is, but that would disqualify him from being a good judge of architects and architecture. The two are incompatible.

I note that the plan factory magnate who fathered the opus (I see several hands in it) says the chapel needs another year's study. I suggest ten more and then throw it away. When the great art of Architecture comes down to this sort of thing—what is the right name for such violation of nature?

The Sanitary Age will have too much such stupid hostility for Nature to answer for.

FRANK LLOYD WRIGHT

help to supervisors

Dear Editor: Your article, "Drafting Room Efficiency," in May 1955 P/A has a timely and constructive message.

As Chief Engineer with Indenco Engineers, Inc., Oakland, California—with 30 to 40 men to supervise—drafting room efficiency has become a must to me for successful business operation.

In this first article, Hans W. Meier has brought to our attention several factors effecting efficiency. This reawakened awareness should help many supervisors to better effect the desired efficiency. The need for "active" application of the principals enumerated should stimulate supervisors to greater efforts.

This office eagerly awaits the next two articles* for further ideas to improve our drafting room efficiency.

A. D. AUGER
Oakland, Calif.

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* See *June 1955 P/A* and *July 1955 P/A.*

credits for architects

Dear Editor: Reading your P.S. column in May 1955 P/A, I thought for a moment I had picked up by mistake a copy of the trade journal of the hat or photo industry —so much having been made in the article of my hatless and hatted state and my photogenic qualities!

I want to thank you for your handsome compliments and advise you that aside from the personalities indulged in, you have, I believe, a good point. The architects *are* entitled to credit in connection with the design of public buildings and we do acknowledge their work in our printed invitations to dedications, etc., as well as on plaques in such buildings. I have issued orders that similar credit be given in the future in our Annual Report.

FREDERICK H. ZURMUHLEN
Commissioner, Dept. of Public Works
New York, N. Y.

P.S. I appear hatless in the May 19 issue of *Engineering News-Record.*

no cure-all

Dear Editor: The article titled "Limit Design," by Mario G. Salvadori (*April 1955 P/A*), is a very clear and interesting presentation of the subject. I believe most engineers will agree that the

(Continued on page 16)

(Continued from page 15)

theory of limit design is the most logical method of designing structures because it reflects the true action of continuous members under load, thereby producing maximum economy. But, as the author says, limit design is no cure-all and requires conscientious analysis of all factors involved. And therein lies our most troublesome problem: so few designers are capable of properly analyzing all the factors involved.

Unfortunately, structural design in recent years has too often consisted of the solution of equations given in handbooks and building codes, with very little visualization of the action of the structure under load. Actually, though, whether the designer was aware of it or not, a redistribution of stress due to plastic flow has in many instances saved him from acute embarrassment.

Before limit design can be used generally, I believe it will be necessary for colleges and universities to teach the subject, briefly if necessary, in order to acquaint the student with these facts: that elastic analysis is not based upon immutable laws; that loaded structures sometimes appear to be disdainful of the most beautiful mathematical equations. I have known many young engineers who felt that, once negative and positive moments had been determined by elastic analysis, they were irrevocably fixed and that there could be no shifting of moment from one point to another. In fact, they could see only the mathematics, not the structure. This attitude will have to be changed before such engineers can successfully apply the theory of limit design.

Greater economy in construction could also be obtained by a few simple changes in existing building codes. For instance, I can see no real reason for using the same steel and concrete stresses for all types of buildings. What we strive for in design is maximum economy without a sacrifice of safety. And since overload is one of the greatest hazards, it appears that unit stresses could vary with the type of usage. A warehouse designed for a live load of 250 psf might at some time be loaded with 500 psf; therefore, steel and concrete stresses now in use are not too high. But an apartment building, designed for a live load of 40 psf, is not likely ever to be overloaded, provided the dead load was accurately calculated. Consequently, steel and concrete stresses in such structures could, in my opinion, be 15 to 20 percent higher.

Undoubtedly, limit design will eventually be recognized by the writers of building codes, but such recognition will come, I believe, only after careful consideration of the disparity in ability of designers.

I. E. MORRIS
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Atlanta, Ga.

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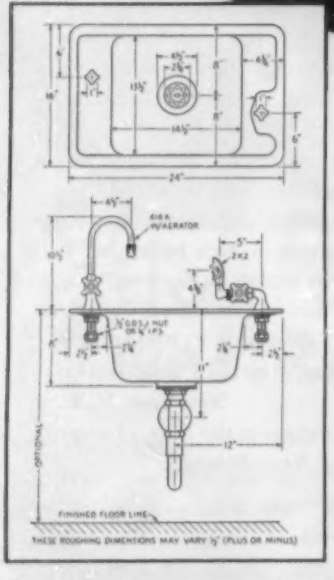

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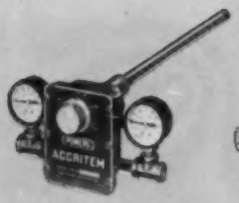

Above: POWERS ACCRITEM Temperature Regulator, is water or compressed air operated. Controls FLOWRITE diaphragm valve (right). Widely used for Water Heaters and Industrial Processes.

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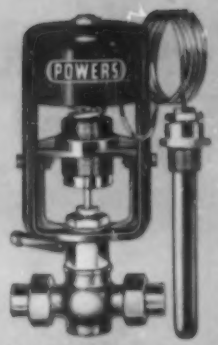

Powers No. 11 Self-Operating Regulator widely used for water storage heaters, heat exchangers, fuel oil preheaters and many industrial processes.

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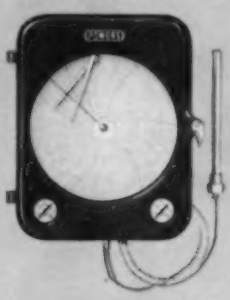

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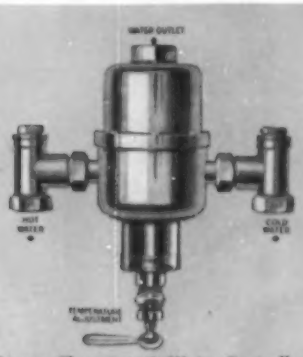

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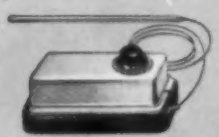

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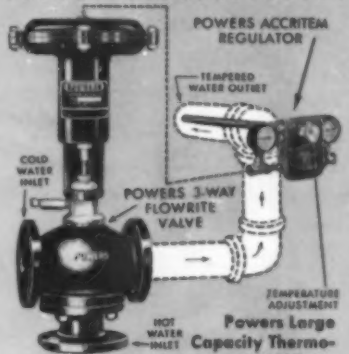

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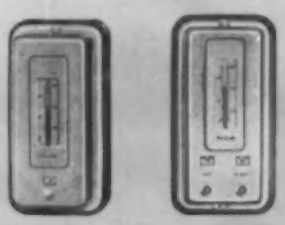

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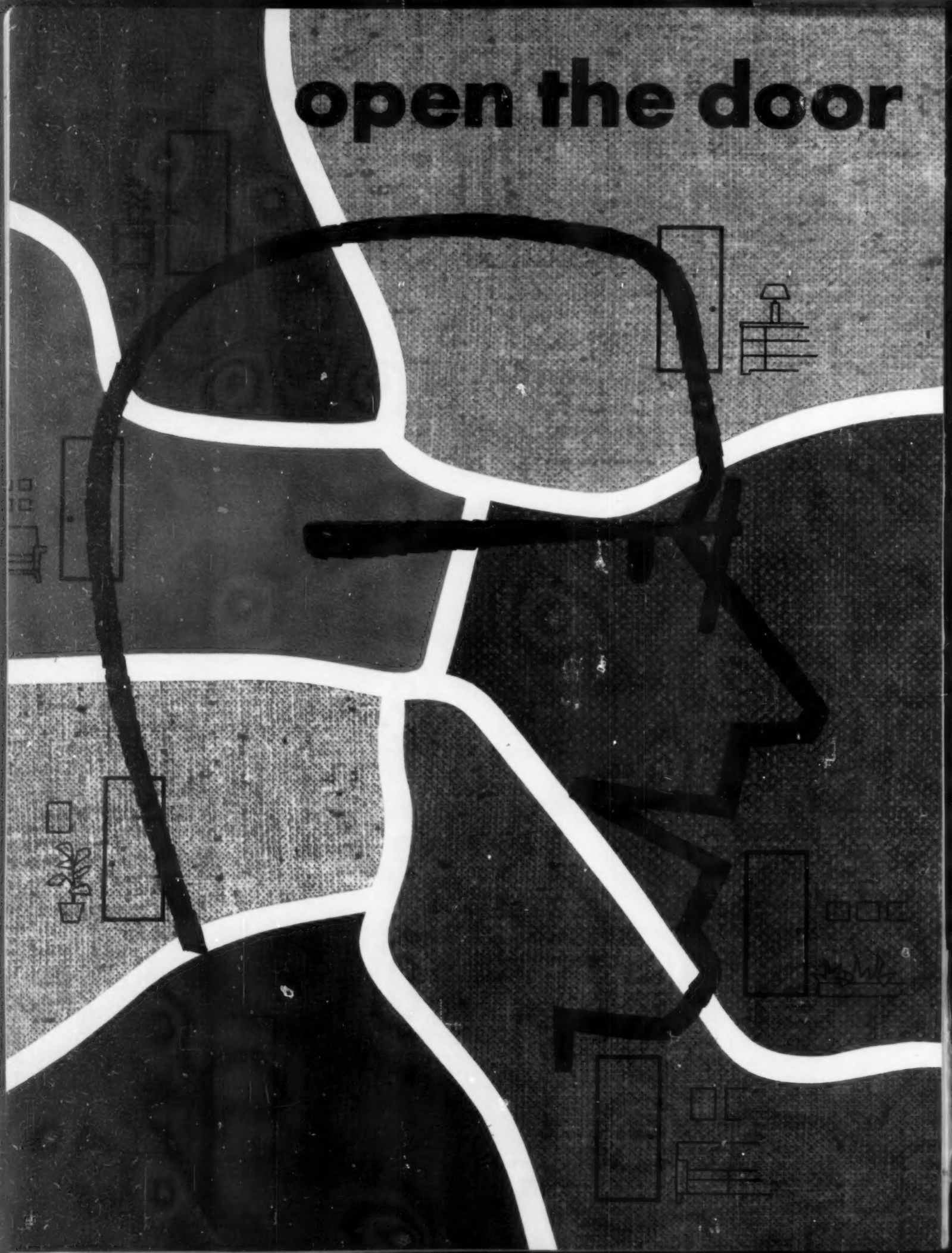
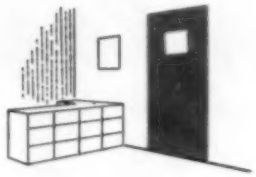

open the door

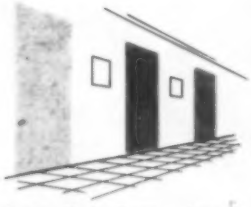
to your imagination

Never before has a door aroused the creative imagination of designers as has this new Kawneer door. Multiple colors and patterns provide a variety of original design opportunities.

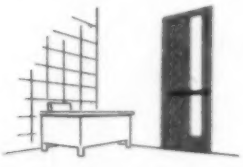
Tile red—Solid color with embossed leather-like appearance. Ideal for the regal-type design*.



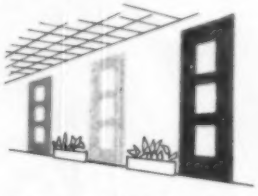
Sage green—Same texture as Tile Red. Blends easily with over-all design concept. Easy to style*.



Jonquil yellow—Linen pattern in a bright, sunny color to liven dark locations. Simple to blend and match.

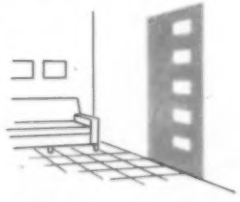


Olive green—Linen with a design-opportunity color. Brings Spring to any office or reception room.



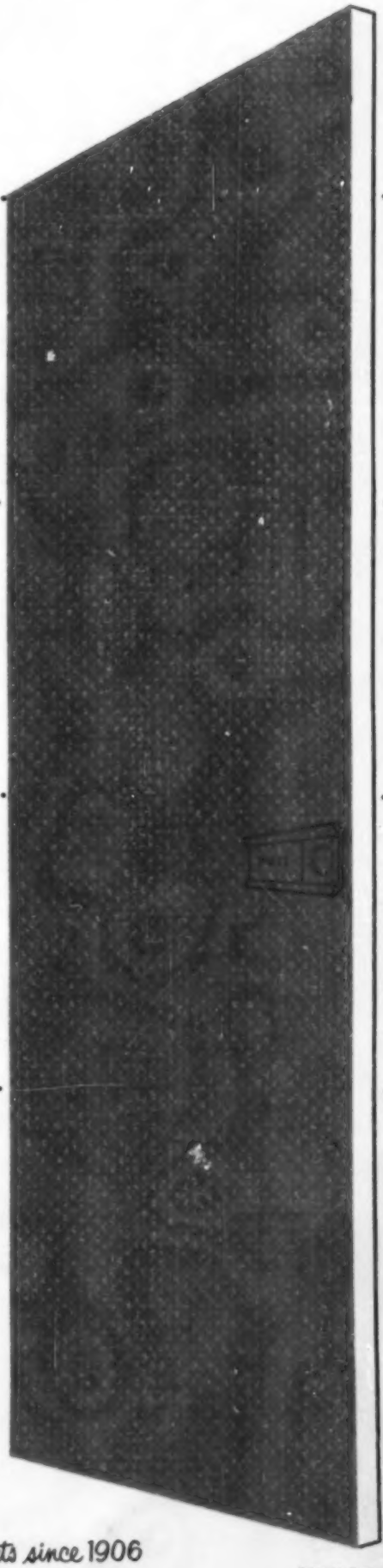
Flame red—Popular color with linen pattern to make any setting alive with interest and excitement.

Salt & pepper—Easy to match, yet provides a smart atmosphere. In distinctive linen pattern.



Smooth saddle tan—Perfect for the masculine expression. Has the appearance of rich saddle leather.

Cross-section of Kawneer honeycomb door showing complete lamination. Doors also available with ribbed aluminum skin only.



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STRUCTURALS

The Supreme Court has at last spoken in *Berman* v. *Parker*, and by its decision established a landmark in community planning. Consider these quotes:

"• • • Miserable and disreputable housing conditions may do more than spread disease and crime and immorality. They may also suffocate the spirit by reducing the people who live there to the status of cattle. They may indeed make living an almost insufferable burden. They may also be an ugly sore, a blight on the community which robs it of charm, which makes it a place from which men turn. The misery of housing may despoil a community as an open sewer may ruin a river.

"We do not sit to determine whether a particular housing project is or is not desirable. The concept of the public welfare is broad and inclusive. See *Day-Brite Lighting, Inc.* v. *Missouri*, 342 US 421, 424, 96 L ed 469, 472, 72 S Ct 405. The values it represents are spiritual as well as physical, aesthetic as well as monetary. It is within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled. In the present case, the Congress and its authorized agencies have made determinations that take into account a wide variety of values. It is not for us to reappraise them. If those who govern the District of Columbia decide that the Nation's capital should be beautiful as well as sanitary, there is nothing in the Fifth Amendment that stands in the way.

"• • • The particular uses to be made of the land in the project were determined with regard to the needs of the particular community. The experts concluded that if the community were to be healthy, if it were not to revert again to a blighted or slum area, as though possessed by a congenital disease, the area must be planned as a whole. It was not enough, they believed, to remove existing buildings that were insanitary or unsightly. It was important to redesign the whole area so as to eliminate the conditions that cause slums —the overcrowding of dwellings, the lack of parks, the lack of adequate streets and alleys, the absence of recreational areas, the lack of light and air, the presence of outmoded street patterns. It was believed that the piecemeal approach, the removal of individual structures that were offensive, would be only a palliative. The entire area needed redesigning so that a balanced, integrated plan could be developed for the region, including not only new homes but also schools, churches, parks, streets, and shopping centers. In this way it was hoped that the cycle of decay of the area could be controlled and the birth of future slums prevented. Cf. *Gohld Realty Co.* v. *Hartford*, 141 Conn 135, 141—144, 104 A2d 365, 368—370; *Hunter* v. *Norfolk Redevelopment & Housing Authority*, 195 Va 326, 338-339, 78 SE2d 893, 900—901. Such diversification in future use is plainly relevant to the maintenance of the desired housing standards and therefore within congressional power."

The decision in *Berman* v. *Parker* is a significant addition to the law of slum clearance and community redevelopment. This case approved the condemnation of *inoffensive* property located in a slum area which was being condemned and redeveloped. The decision is important not only for what it decides, but also for the esthetic grounds on which the decision partly rests.

The case involved the constitutional-

(Continued on page 22)

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20-Year Guarantee!

on the wetted deck surface against rotting or fungus attack.

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it's the law

(Continued from page 21)

ity of the District of Columbia Redevelopment Act of 1945. This act established an agency with power to redevelop slum areas in Washington, D. C., into planned communities on a co-ordinated basis for the entire territory.

The *Berman* case arose when the owner of a department store located in a slum area objected to the taking of his property on the ground that it was not slum housing. The property was commercial, not residential, and it was in good condition. Therefore, the owner argued, it would be unconstitutional to condemn his property when it was not contributing to slum conditions.

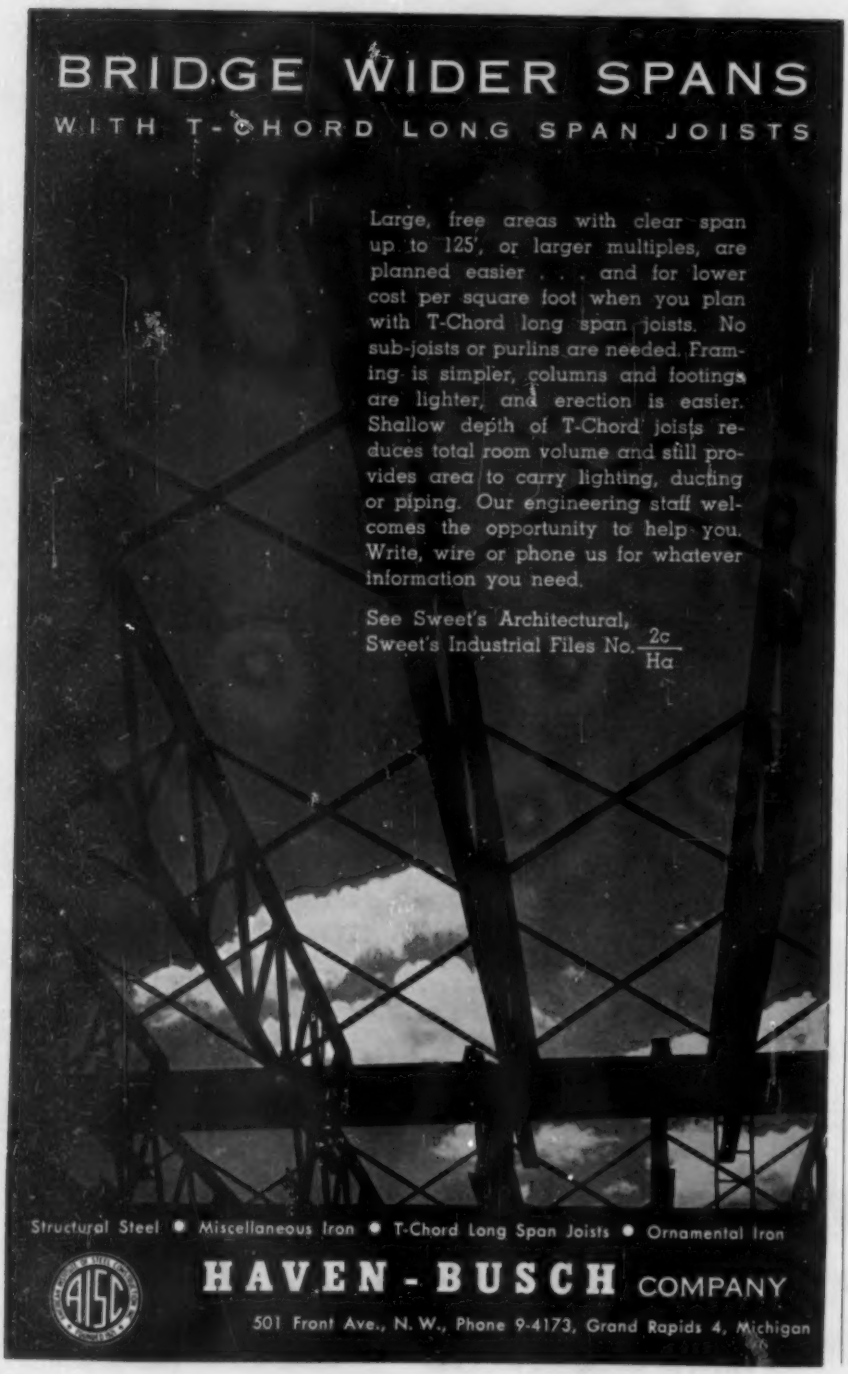
On the other hand, the agency argued that Congress had authorized it to replan the entire area to eliminate slum-causing factors. This required the planning of balanced communities. The agency argued it could not do its job properly if it was not allowed to condemn every building and reconstruct the whole area.

The Court held that the property could constitutionally be taken even if it did not then contribute to slum conditions. It said that Congress could determine that "the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled."

The decision noted that property might be taken for redevelopment which "standing by itself is innocuous and unoffending. But we have said enough to indicate that it is the need of the area as a whole which Congress and its agencies are evaluating. If owner after owner were permitted to resist these redevelopment programs on the ground that his particular property was not being used against the public interest, integrated plans for redevelopment would suffer greatly."

In the next issue I shall discuss the effects of the Berman *case on community redevelopment and the significance of the Court's consideration of esthetic values.*

B. T.


BRIDGE WIDER SPANS
WITH T-CHORD LONG SPAN JOISTS
Large, free areas with clear span up to 125', or larger multiples, are planned easier . . . and for lower cost per square foot when you plan with T-Chord long span joists. No sub-joists or purlins are needed. Framing is simpler, columns and footings are lighter, and erection is easier. Shallow depth of T-Chord joists reduces total room volume and still provides area to carry lighting, ducting or piping. Our engineering staff welcomes the opportunity to help you. Write, wire or phone us for whatever information you need.
See Sweet's Architectural, Sweet's Industrial Files No. 2c/Ha
Structural Steel • Miscellaneous Iron • T-Chord Long Span Joists • Ornamental Iron
HAVEN-BUSCH COMPANY
501 Front Ave., N. W., Phone 9-4173, Grand Rapids 4, Michigan

notices

P/A congratulates

WILLIAM H. HASSELBACH, newly elected vice-president — engineering, LIBBEY-OWENS-FORD GLASS COMPANY, and ROY A. NYQUIST, EMMETT L. WALTERS, RUSSELL W. ABBOTT, ALFRED H. MILLER, WAYNE W. KOHN, and RICHARD E. WARREN, all of whom were recently advanced to keep pace with the most extensive development program in the history of Libbey-Owens-Ford.

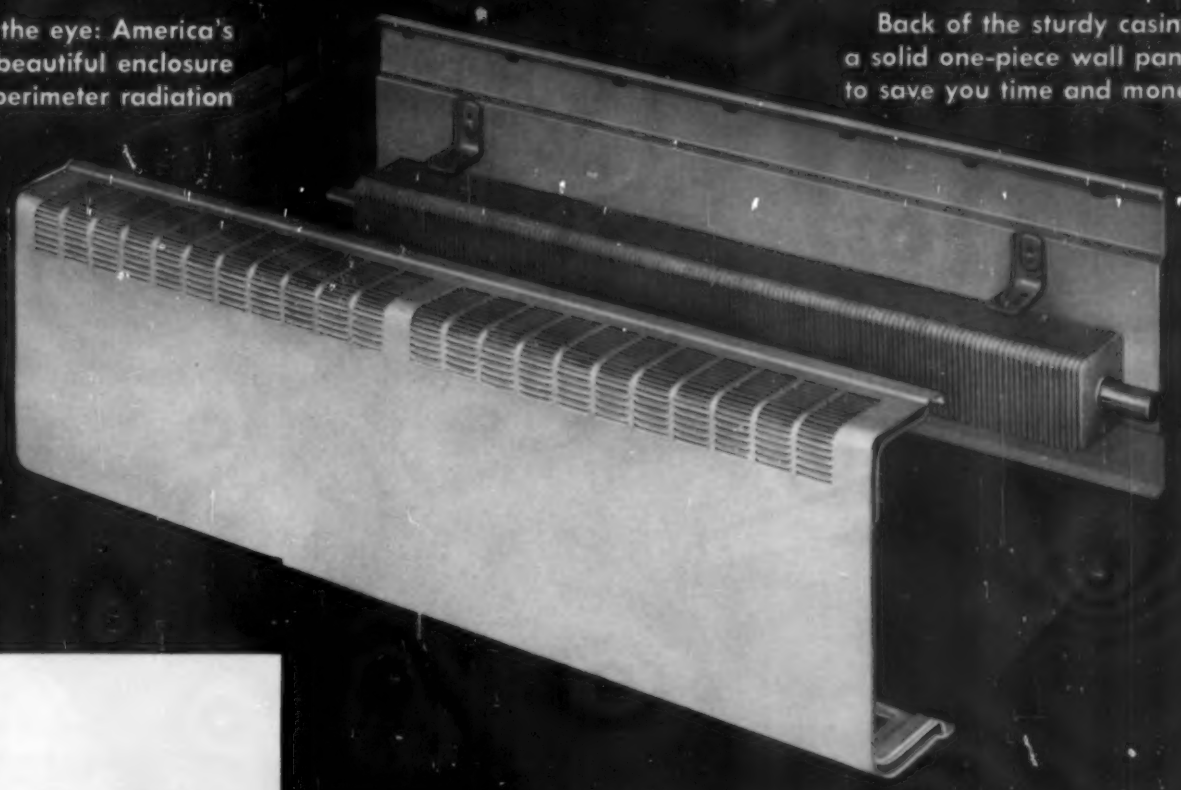
EDWARD L. GLUCK, whose appointment as New York Sales Manager of Architectural Lighting Division is announced by MCPHILBEN MANUFACTURING CO., INC., Brooklyn, N. Y.

ADON H. BROWNELL, whose election to office of Vice-President, in charge of sales, was recently announced by LOCKWOOD HARDWARE MANUFACTURING COMPANY, Fitchburg, Mass.; and SAMUEL GILBERT, newly appointed Sales Manager of the Company.

Sill-line: Beauty backed by VALUE

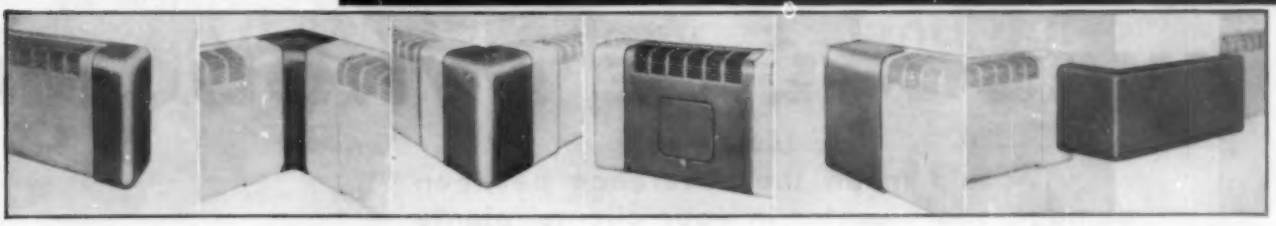
To the eye: America's most beautiful enclosure for perimeter radiation

Back of the sturdy casing: a solid one-piece wall panel to save you time and money



Built up to a standard, not down to a price

The heavier 16-gauge enclosure finished in baked enamel will forever remind you of its beauty and endurance. The standard one-piece back panel that covers raw walls and insures quick, rigid, true-alined installation more than pays its way in savings of time and face material.



Most for the dollar

Nesbitt Sill-line Radiation is today's best buy in perimeter heating. It offers the most beauty, comfort and convenience for the dollar. For use with steam or hot water; capacities, 2.9 to 11.1 sq ft EDR. Five cabinet types; seven lengths of casing and element from 2′ to 8′. Complete accessories and sleeves—no cutting on the site.

Insist on Nesbitt

Make sure you get all the features Nesbitt Sill-line offers: one-piece back panel, sturdy 16-gauge enclosure, baked enamel finish, and a full range of matching accessories. Send for Publication 102.

Nesbitt Baseboard Radiation
Ask for Publication 272

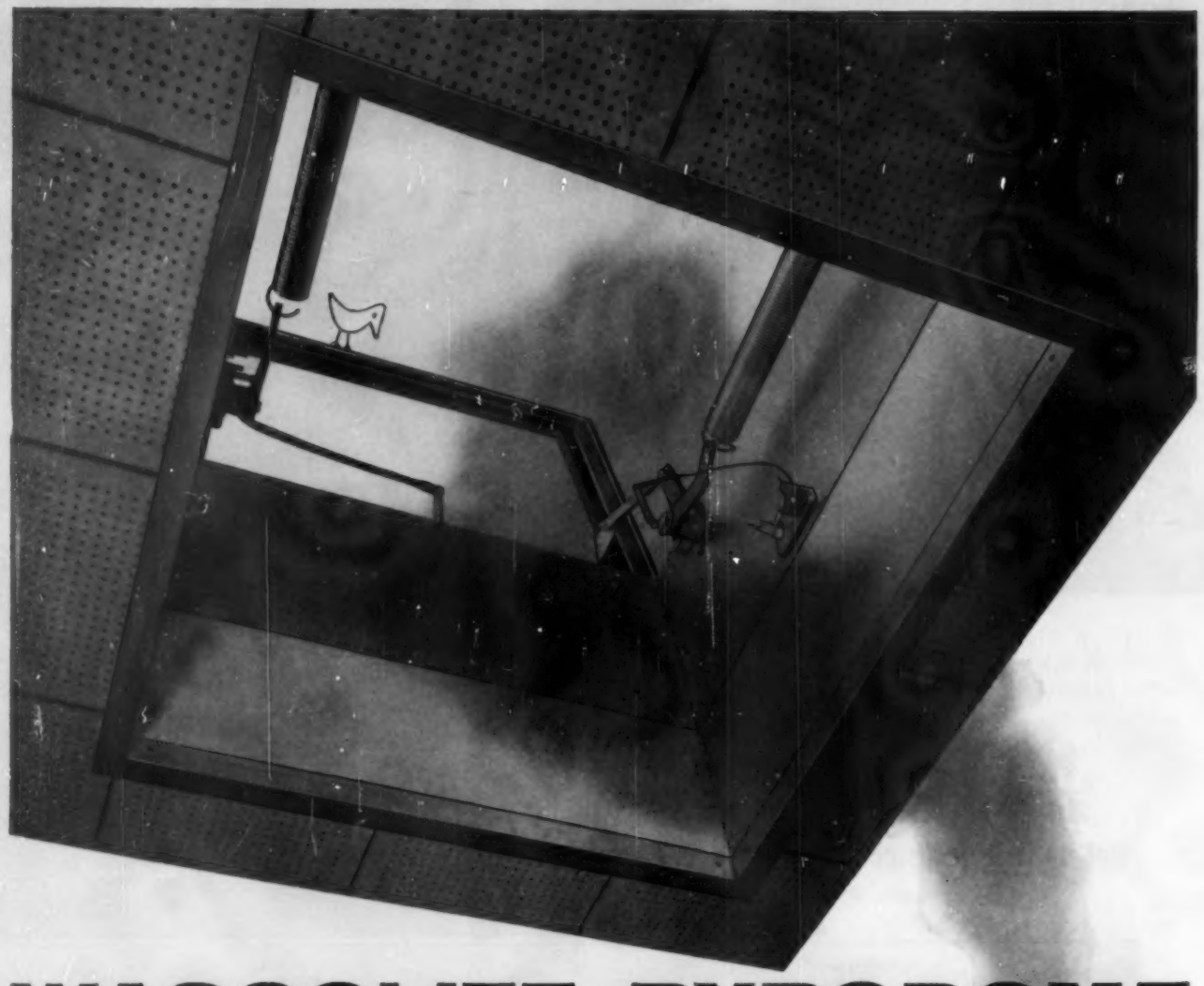
Nesbitt Convectors
Publication 262

Gas-fired Unit Heaters
Publication 280

Nesbitt
Sill-line Radiation

THIS GREAT NEW PRODUCT PROVIDES

DAYLIGHTING + FIRE PROTECTION



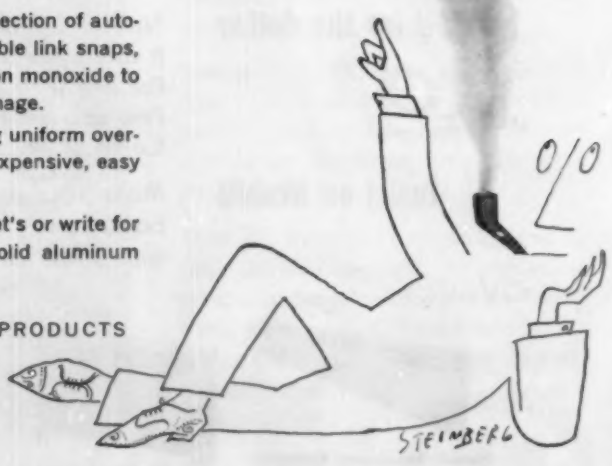
WASCOLITE PYRODOME

...could mean the difference between damage and disaster in your clients' plants

The WASCOLITE PYRODOME gives clients the added protection of automatic fire venting. Under excessive heat, PYRODOME's fusible link snaps, and the dome flies open. This allows heat, smoke and carbon monoxide to escape, and thus helps to contain the fire and minimize damage.

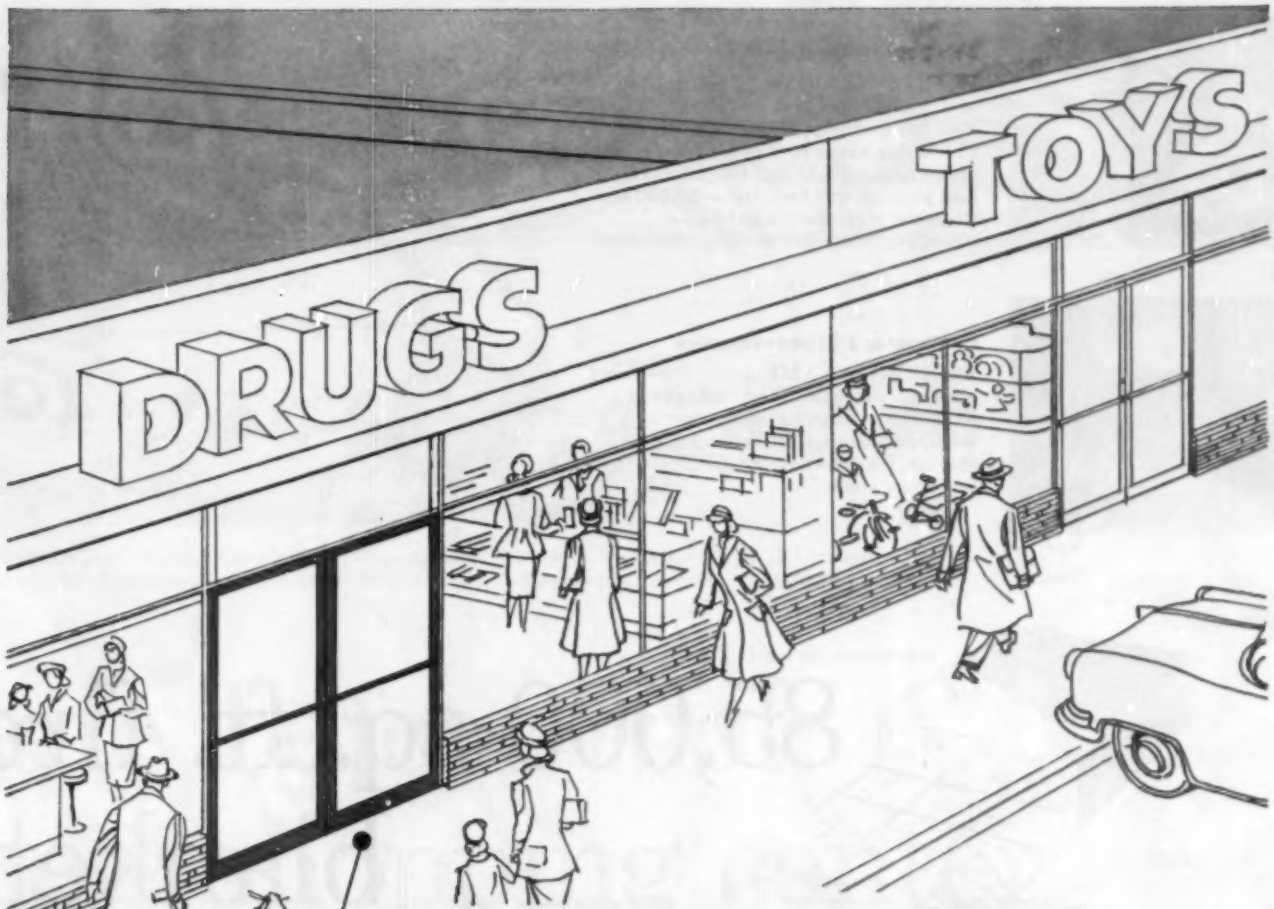
Even if there is no fire PYRODOME is on the job supplying uniform overhead daylighting through its Wascolite acrylic dome. It is inexpensive, easy to install, and cuts lighting costs.

Look into the WASCOLITE PYRODOME today . . . see Sweet's or write for illustrated catalog. Also available: Wasco Pyrovent with solid aluminum cover for venting only.



• TOP SPECIALISTS IN DAYLIGHTING AND FLASHING PRODUCTS

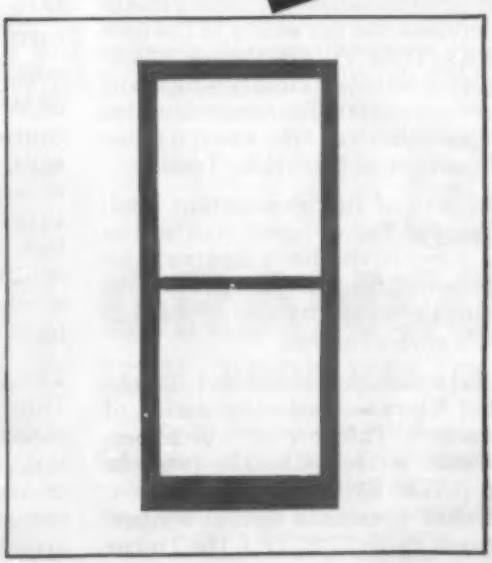
WASCO PRODUCTS, INC.
90C Fawcett Street, Cambridge 38, Mass.
Pat. Nos. 2610593, 2693156 and pats. pend.



color sells!

Overline® entrances stand out

Today, the entrances with the *color* catch the eye . . . draw the trade through the doorways into the store for increased sales. Overline Entrance Doors can be ordered in any desired *color*—baked enamel finish on steel. They're handsome, yet really rugged! Send a sketch of your entrance requirements. Write us today for our "Overline Catalog 15-B."



OVERLY MANUFACTURING COMPANY

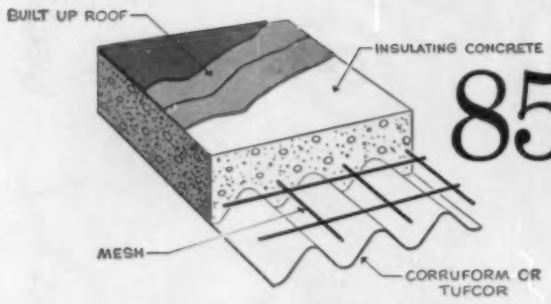
GREENSBURG, PENNSYLVANIA
LOS ANGELES 39, CALIFORNIA

Job Superintendent

W. C. BOWEN says, "Roofing time was really important and Tufcor kept work moving ahead smoothly. Pre-sizing made it easy for two-man crews to place 7 to 8,000 sq. ft. a day, and pouring was fast, too—28,000 sq. ft. in one day. Tufcor gave us a strong roof and a safe working platform."

Contractor's Representative

WARREN O. LAMB says, "Speed and economy are two big advantages of Tufcor. Roofing proceeded on schedule and we saved the cost of shoring, too. That meant savings in time and labor costs."



85,000 sq. ft. fire-blankets

Nashville architects and builders provide fire protection for owners and tenants, thousands of dollars in insurance savings.

An 85,000 sq. ft. roof of Granco Tufcor and Corruform with lightweight insulating concrete greatly increases the fire safety of the new Green Hills Village Center, a two-story multi-shop facility which will serve over 5,000 Tennessee families in the suburban area about 6 miles southwest of Nashville, Tenn.

Because of its fire-resistant qualities, the Tufcor-based roof serves as a positive check against the spread of fire via the roof should it break out in any one of the center's several stores.

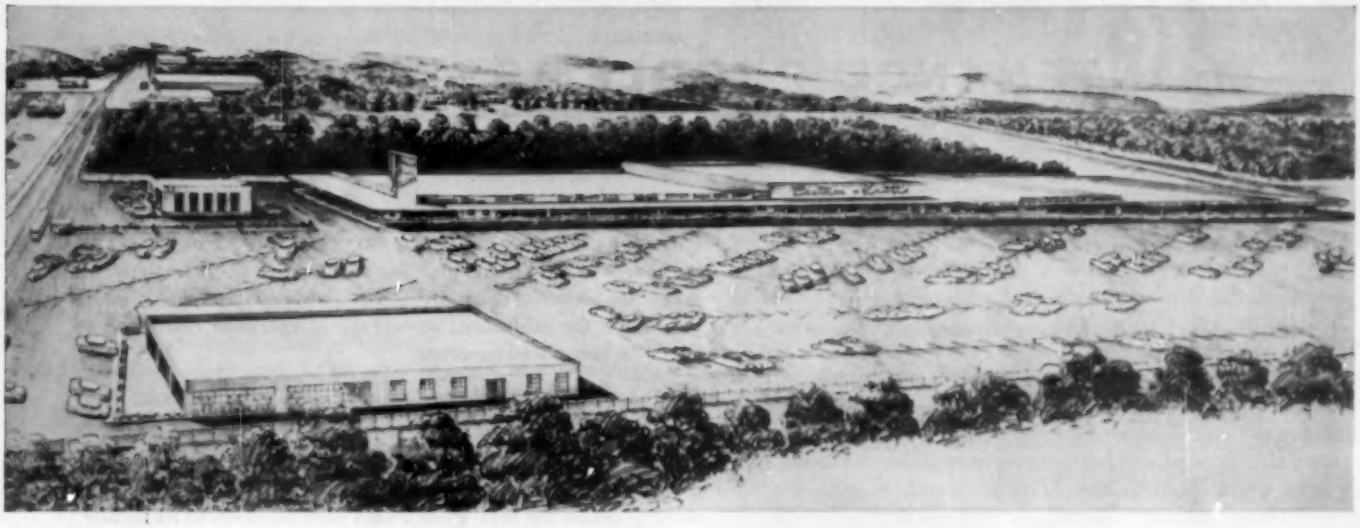
The speedily constructed Tufcor roof follows closely the design of Granco's Tufcor roof which performed so sensationally well in an ASTM E119-50 fire test in 1954. In that 45 minute test, at temperatures up to 1720° (F.), the Tufcor roof didn't burn, didn't feed the flames, and didn't fall. After the test, the roof was still able to carry the full design live load.

Warren O. Lamb, Vice President of W. C. Holt and Sons, general contractors on the Green Hills job, says, "Tufcor is a great time and money saving way to build a fire-safe roof. All you do is open a bundle of Tufcor sheets, place and secure them to the steel framework, and immediately trades have a rigid working platform!"

Tough-temper, corrugated steel Tufcor makes fire-safe roof construction simple, fast and economical. For information, estimates or costs on your building plan, contact home or district office, attention Dept. P-4.

Handles Easily, Places Fast. Tufcor arrives pre-cut to building size. Measuring and cutting is eliminated. Two or three men can place up to 10,000 sq. ft. a day.

Permanent, Fire-Resistant Roof Deck is formed by cast-in-place slab. A strong bond forms between galvanized steel sheet and lightweight concrete fill giving high-strength rigidity to finished deck.



Green Hills Village Center, *Nashville, Tennessee* • Owners: *William C. Weaver, Jr., & W. H. Criswell*
Architects and Engineers: *Hart, Freeland & Roberts, Nashville, Tennessee* • General Contractor: *W. F. Holt & Sons, Nashville, Tennessee*

safe Tufcor roof new shopping center

Steel Sheets Are Quickly Clipped to the steel framing. Welding is equally fast. Positive attachment of tough-temper sheets adds rigidity to roof framework.

An Immediate Safe Working Deck is obtained as soon as Tufcor is attached. Light mesh is added for shrinkage control of the lightweight insulating concrete.

Insulating Concrete Placed on Tufcor is fast operation. On an average roof construction, this material weighs less than 6 pounds per square foot.

Perfect Base for Built-Up Roof. Deck offers two excellent advantages—a good firm base on which to apply the roof and an inorganic, permanent base for long life of the built-up roof.

Neat Plaster Ceiling over Fire-Safe Tufcor. Any normal ceiling treatment is easily applied to Tufcor. Its attractive galvanized surface is sometimes left unfinished when light reflection is wanted.

see our catalog in
S
or write for copy

GRANCO
STEEL PRODUCTS CO.
Also manufacturers of
Cofar, Corruform and Roof Deck
Subsidiary of GRANITE CITY STEEL CO.
Main Office: Granite City, Illinois
District Offices: Dallas • St. Louis • Kansas City
Chicago • Minneapolis • Atlanta
Distributors in 80 principal cities

In specifying resilient floors, for satisfactory service . . .

MAINTENANCE PROBLEMS MUST BE CONSIDERED

Often, the maintenance of resilient floors is considered to be outside the architect's province. There are, however, two very important reasons why familiarity with maintenance problems may materially affect your choice of resilient floors. First, architects are rarely consulted by owners on proper maintenance—and the owner goes ahead with his own methods. If these damage the appearance or shorten the life of the floor, the architect may be thought guilty of improper selection of flooring materials. Secondly, it is important to consider the amount of wear to which the floor area in question will be subjected. Excessive, uneconomical maintenance may result if an unsuitable resilient floor is installed. In his own interest, the architect should therefore be familiar with the amount of maintenance required by each type of floor before specifying one for a particular location.

Apart from their handsome looks, one of the main reasons for the great popularity of resilient floors for both residential and commercial floor installations is their ease of cleaning. They never need costly refinishing. Occasional washing and waxing, along with regular sweeping, are all the maintenance they normally require. However, resilient floors vary in the amount of care they need, and it follows that floors among the easiest to maintain should be specified for areas, such as entrance ways, where frequent cleaning cannot be avoided.

Since the maintenance characteristics of the different types of resilient floors overlap, and ease of maintenance is also affected by the color and pattern of the flooring selected, the following ranking is intended as an approximate guide to the amount of maintenance required by the various Armstrong Floors.

Best Linotile
Excelon Tile
Custom Corlon Tile

Linotile is considered the easiest to maintain of all the Armstrong Floors. Its exceptionally dense, tough composition makes it an excellent choice for heavy-traffic areas. Washing and waxing are usually required infrequently. Both Excelon Tile and Custom Corlon Tile are vinyl plastic floors with exceptional advantages from the standpoint of maintenance. Both provide unusual resistance to the harsh cleaners which are all too often used in spite of manufacturers' warnings. In order to retain the appearance that a lustrous finish gives them, and to provide the added protection that waxing affords, Armstrong has always encouraged and specified occasional applications of a high-quality wax, after washing, as a necessary part of the proper care of plastic floors of all kinds.

Excellent Corlon
Linoleum

Linoleum perhaps best typifies the years of popularity which resilient flooring materials have enjoyed for their ease and economy of maintenance. Regular sweeping and occasional washing and waxing are all that are required to keep linoleum in good condition. Armstrong Corlon, a sheet-type plastic flooring, offers the additional advantage of excellent resistance to common household reagents.

Good Rubber Tile
Asphalt Tile

The smooth plate finish of rubber tile requires slightly more frequent maintenance than the floors described above if it is desired to retain the high gloss which adds so much to its beauty. Rubber tile also benefits from occasional buffing with No. 00 steel wool. This keeps the rubber in prime condition and helps preserve the finish. For its low cost, asphalt tile provides a floor that is remarkably economical to maintain. Careful cleaning and periodic waxing, especially in the first months after installation, will help assure easy maintenance.

Fair Cork Tile
Custom Cork Tile

Cork tile is not ordinarily specified for heavy traffic areas and should not be installed where it will be subjected directly to tracked-in dirt. In areas of less severe traffic, cork tile is readily maintained by daily sweeping and occasional washing and waxing. In cases of excessive soiling, machine scrubbing or sanding and refinishing may be necessary.

The following recommendations for resilient floor care have been outlined by the Armstrong Research and Development Center. They are the result of continuing research over a period of many years on all types of resilient floors. In essence, they show that simplicity is the best technique.

Sweeping. Dirt tends to slip off easily from the smooth, lustrous surface of any resilient floor. Daily sweeping with a soft broom or dry mop will keep this type of flooring clean for long periods. Oil mops or oil-type sweeping compounds are not recommended.

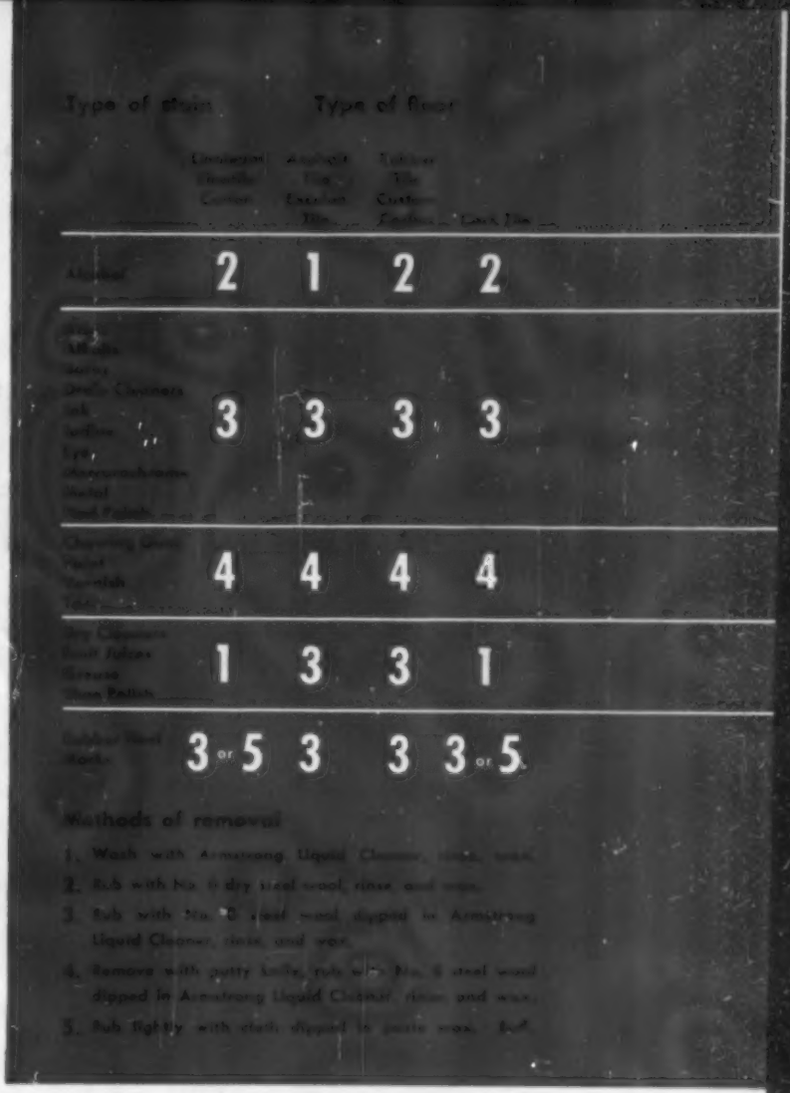
Washing. "More floors are washed away than worn away," says an old adage in the flooring industry. Unless they are subjected to unusual amounts of dirt, resilient floors should be washed infrequently. For all types, Armstrong All-Purpose Liquid Cleaner is recommended. This preparation is manufactured especially for resilient floors. New resilient floors should not be washed until the adhesive is thoroughly set—a period of at least four or five days for all resilient floors.

Waxing. As soon as a resilient floor has been allowed to dry after washing, it should be waxed. Most people have a tendency to use too much wax—a practice as expensive as it is inefficient. A thick film of wax forms a crust on top, leaving a soft, gummy mass underneath. Dirt penetrates the crust and lodges in the soft wax, making the floor appear gray and dirty. It is much better to apply two thin coats than one thick coat.

Paste waxes, which may contain oil, grease, or solvents such as naphtha or turpentine, should never be used on resilient flooring. The ideal wax for all resilient floors is a water-emulsion type such as Armstrong Linogloss Wax, which dries in less than 20 minutes to a hard, colorless finish that is lustrous but not shiny. Linogloss® Wax is made especially for resilient floors.

Stain removal. The adjoining chart shows suggested methods of removing stains from all types of Armstrong Resilient Floors. It does not cover all types of blemishes, and the methods outlined may not remove all stains. However, they have proved to be the best and safest way to remove the most frequently encountered stains. Armstrong will always be happy to advise on any particular stain removal problem for which these methods do not prove fully effective.

Protection. An element in the care of resilient floors which is often overlooked, but adds greatly to their life and beauty, is the use of furniture rests. The function of a furniture rest is simply to extend the area over which the weight of furniture loads is distributed, and thus prevent indentation. The following table shows the recommended types of rests for various furniture weights.



Recommendations for the selection of Armstrong Furniture Rests

Weight of fully loaded furniture	size of rest or cup required (specify by number) Corlon and Linoleum	Linotile	Excelon, Asphalt Tile	Custom Corlon, Rubber Tile	Cork Tile
Up to 50 Lbs. per leg	NT-10 CT-100 CFT-300 CFT-301	NT-10 CT-100 CFT-300 CFT-301	NT-20 CT-200 CFT-400 CFT-401	NT-10 CT-100 CFT-300 CFT-301	NT-20 CT-200 CFT-400 CFT-401
50-100 Lbs. per leg	NT-20 CT-200 NDC-6 CFT-400 CFT-401	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NT-50 CT-500 NDC-7	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NT-35 CT-350 NDC-6
100-150 Lbs. per leg	NT-20 CT-200 NDC-6 CFT-400 CFT-401	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NDC-225	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NT-50 CT-500 NDC-7
150-200 Lbs. per leg	NT-35 CT-350 NDC-6	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NDC-325	NT-10 CT-100 NDC-6 CFT-300 CFT-301	NT-50 CT-500 NDC-225
200-250 Lbs. per leg	NT-35 CT-350 NDC-6	NT-20 CT-200 NDC-6 CFT-400 CFT-401	NDC-325	NT-20 CT-200 NDC-6 CFT-400 CFT-401	NDC-225
250-300 Lbs. per leg	NT-50 CT-500 NDC-7 NDC-125	NT-20 CT-200 NDC-7 NDC-125 CFT-400 CFT-401	NDC-325	NT-20 CT-200 NDC-7 NDC-125 CFT-400 CFT-401	NDC-325

CFT Chrome Furniture Type — NT Nail Type — CT Cotter Type — NDC Cup Type

ARMSTRONG CORK COMPANY makes all types of resilient floors for all types of interiors. Almost any flooring problem can be met with one or more of the floors in the Armstrong Line. As a result, we have no special bias toward any one type and can offer architects impartial recommendations on any flooring problem. Our main interest is to aid you in making a sound flooring selection.

Armstrong's sales representatives throughout the country will be glad to consult with architects and make specific recommendations for individual jobs. Your Armstrong representative has a wide variety of experience and training in resilient flooring and can also call upon Armstrong Research and Development Center for assistance with special problems.

For helpful information on any flooring question, just call your nearest Armstrong District Office or write direct to Armstrong Cork Company, Floor Division, Lancaster, Pa.

PLASTICS

CUSTOM CORLON® TILE
EXCELON® TILE
MORESQ* CORLON
DECORESQ® CORLON
GRANETTE® CORLON
TERRAZZO* CORLON

RESILIENT TILES

ASPHALT TILE
Standard
Greaseproof
Flagstone*
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RUBBER TILE
LINOTILE®
CORK TILE
CUSTOM CORK TILE
LINOLEUM TILE

* Trade-Mark

Turns your wasted fuel into

Herman Nelson DRAFT|STOP System Eliminates Overheated Classrooms; Substitutes Controlled Cooling for Costly Open Window Ventilation

CLOSE the windows and cut your heating costs! It's just that simple—with the installation of Herman Nelson DRAFT|STOP. And, in addition to the dollars saved, you eliminate the end product of the overheated classroom—logy, listless students.

Herman Nelson DRAFT|STOP achieves these results because it "puts first things first"—makes COOLING the prime function during the hours of classroom occupancy. As your "extra heating plants"—students, lights and sun—go to work, this system automatically introduces outdoor air in sufficient quantities to keep classrooms at comfort level. Herman Nelson's thrift even extends to its method of draft elimination which requires no heat— thereby saving more fuel dollars and simplifying the cooling problem.

Yes, if you count the cost, you'll close the windows—and let Herman Nelson provide double dividends in the form of cash savings and true classroom comfort. For complete information, see our catalog in Sweet's Architectural File, or mail coupon on adjoining page.

CALIFORNIA. An outstanding school in a perfect setting. New San Lorenzo Valley High School, Felton, Calif., features Herman Nelson Unit Ventilators for day-long classroom comfort. District Superintendent: Dr. Eugene Haskell; Architect: John Lyon Reid & Partners; Engineer: Bayha, Weir & Finato; Mechanical Contractor: Atwood & Sons.

DRAFT STOP

Provides

COOLING, HEATING
VENTILATION, ODOR CONTROL
DRAFT ELIMINATION

All at minimum cost

herman nelson

UNIT VENTILATOR PRODUCTS

AMERICAN AIR FILTER COMPANY, INC.

SYSTEM OF
CLASSROOM COOLING, HEATING AND VENTILATING

cool savings!

MICHIGAN. Installation of Herman Nelson Unit Ventilators at the Ralph J. Bunche School, Ecorse, Mich., features unique DRAFT|STOP Wall which, in addition to eliminating window downdrafts, serves as an economical wall finish. Note how filler section fits around pilaster—another example of Herman Nelson flexibility. Superintendent of Schools: Ralph E. Brant; Architect: Bennett & Straight; Engineer: Benjamin Schulz & Associates; Mechanical Contractor: Standard Plumbing & Heating.

ILLINOIS. Perfect "teaching temperature" assured Grant School, Decatur, Ill., by Herman Nelson Unit Ventilators. Superintendent of Schools: Lester Grant; Architect and Engineer: Harris, Spangler, Beall & Salogga; Mechanical Contractor: S. E. McDaniel & Co., Inc.

OTHER AAF herman nelson SCHOOL PRODUCTS

KEEPS WOODWORKING SHOP SPIC AND SPAN

Type D ROTO-CLONE collects chips and sawdust from woodworking equipment at St. Bernard High School, Cincinnati, Ohio. The unit is self-contained and requires little floor space.

BALANCES HEAT AND BUDGETS

Illinois Selectotherm—an automatically controlled high vacuum steam heating system which through single dial control, balances heat supply against heat loss in many school spaces.

COMFORT WITHOUT CONFUSION IN THE AUDIO-VISUAL CLASSROOM

Herman Nelson Light|Stop accessory permits operation of unit ventilator in darkened classroom — prevents discharge air from billowing curtains and causing distracting light streaks.

American Air Filter Co., Inc.
Dept. PA-7
Louisville 8, Kentucky

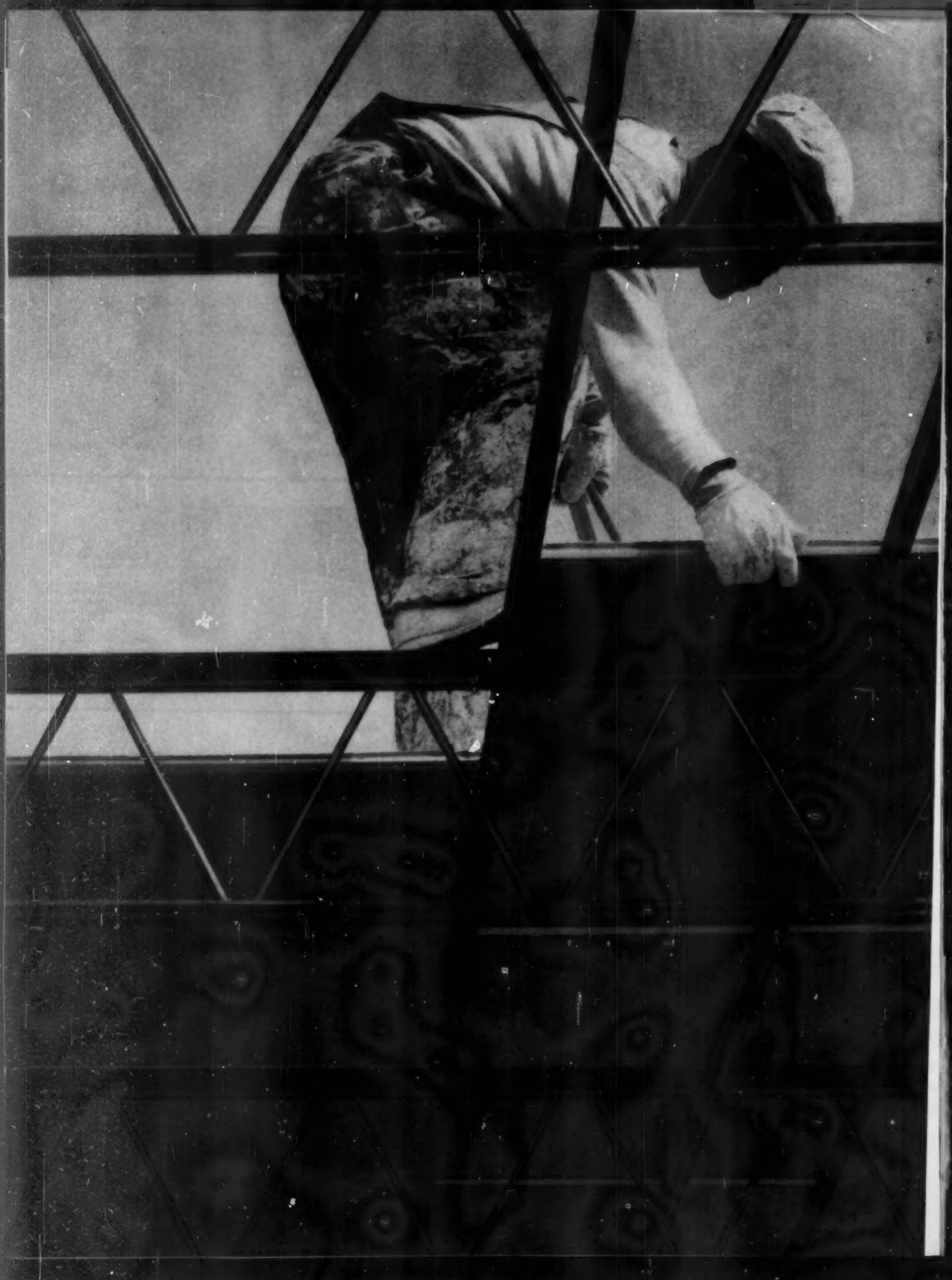
I would appreciate receiving literature describing the following products—

- ☐ Classroom Unit Ventilators
- ☐ Illinois Selectotherm
- ☐ Light|Stop Curtain Accessory
- ☐ Dust Control for Woodworking Shops

Name_____

Address_____

City_____ State_____



NEW roof deck formboard

provides fire protection...insulation and sound control values

PYROFORM

MINERAL FIBER FORMBOARD

This latest U.S.G. development offers a host of high-performance advantages that make it the perfect partner to PYROFILL*, the preferred poured-in-place gypsum roof deck.

PYROFORM is incombustible—qualifies under Class A (incombustible) Federal Specifications SS-A-118b.

PYROFORM insulates—with a C factor of 0.24, an R factor of 4.17, it provides above-average insulation. U values for various PYROFORM-PYROFILL constructions prove the combination to be an exceptional barrier to heat transmission.

PYROFORM quiets noise—official tests show it has a noise reduction coefficient of 0.75.

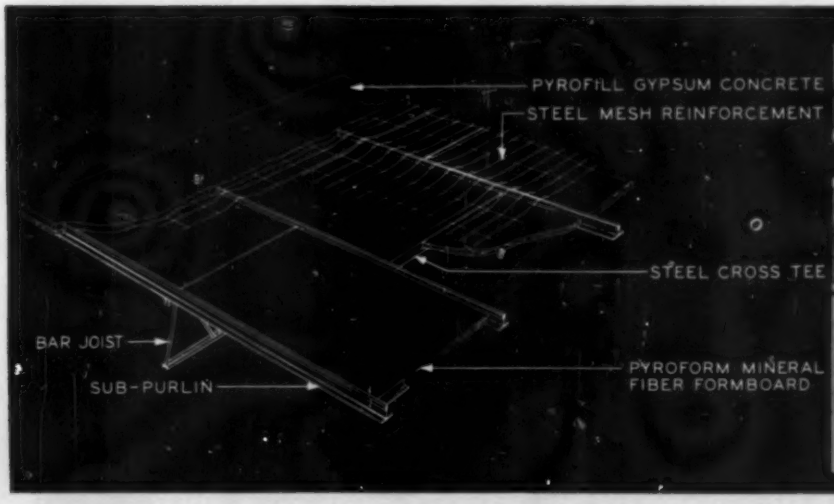
Moreover, it's strong and stable, smooth and attractive. Placed on sub-purlins spaced 32⅝″ o.c., PYROFORM will support a 2″ thick slab of PYROFILL slurry gypsum concrete with only minor deflection. The mineral fibers are unaffected by moisture and will not deteriorate. The under surface can be left exposed as the finished ceiling, saving on decorating costs.

PYROFILL roof decks fear no fire

For full information, call: Your authorized PYROFILL Contractor, your U.S.G. Architect's Service Representative, or write United States Gypsum, Dept. PA-4, 300 West Adams Street, Chicago 6, Illinois.

UNITED STATES GYPSUM

the greatest name in building



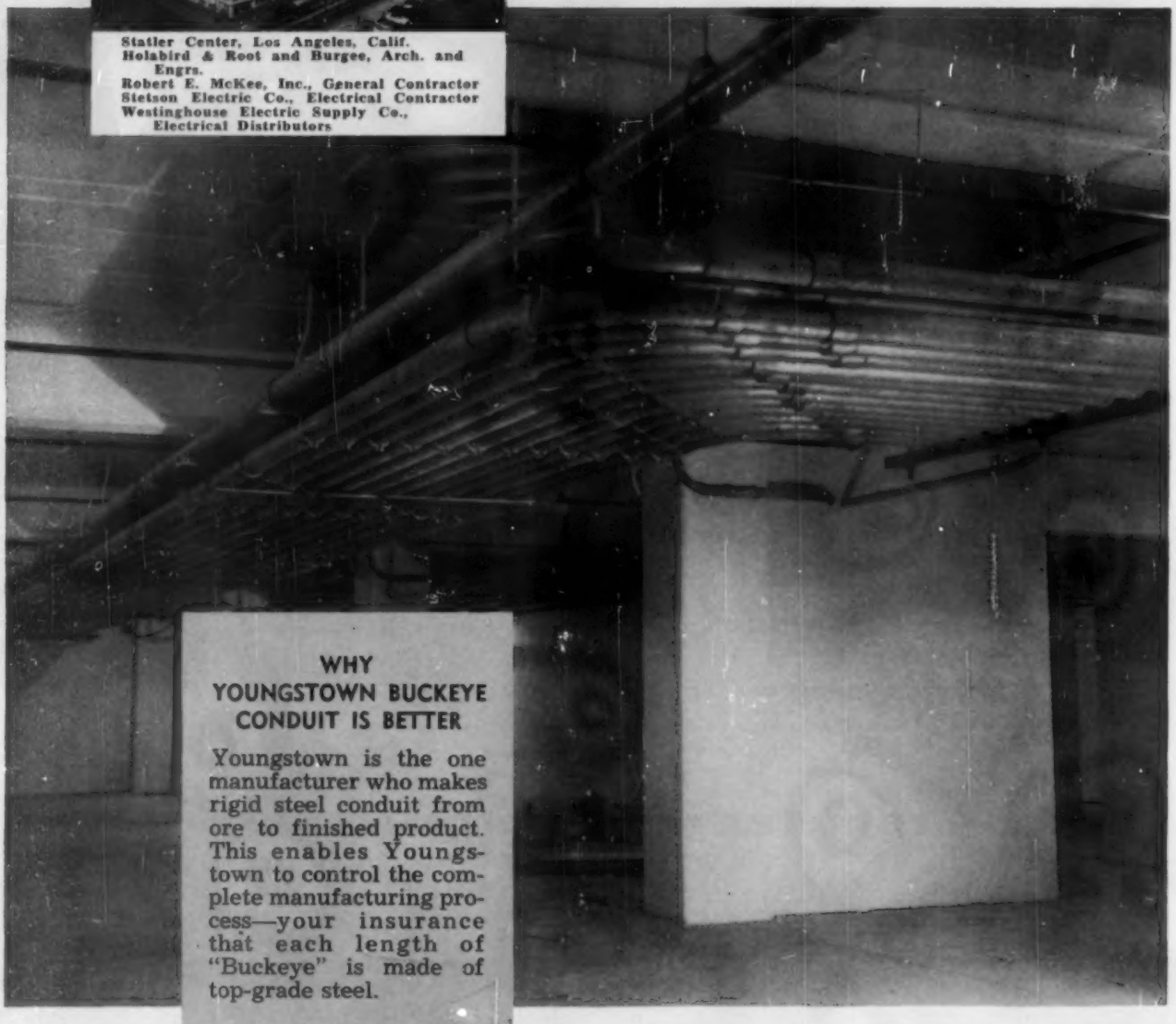
Typical installation of new PYROFORM Formboard, on steel cross tees. New process felts and bonds mineral fiber into boards, 1″ x 32″ x 48″.

*T. M. Reg. U. S. Pat. Off.

Pouring PYROFILL slurry. Outstanding advantages: incombustible, low in cost, adaptable, light-weight, strong, durable, quickly installed.

Youngstown Buckeye Conduit protects Statler wiring in L. A.

Statler Center, Los Angeles, Calif.
Holabird & Root and Burgee, Arch. and Engrs.
Robert E. McKee, Inc., General Contractor
Stetson Electric Co., Electrical Contractor
Westinghouse Electric Supply Co., Electrical Distributors



WHY YOUNGSTOWN BUCKEYE CONDUIT IS BETTER

Youngstown is the one manufacturer who makes rigid steel conduit from ore to finished product. This enables Youngstown to control the complete manufacturing process—your insurance that each length of "Buckeye" is made of top-grade steel.

Youngstown

QUALITY YOUNGSTOWN SERVICE

●Years ahead in design and accommodations, the new $25 million Statler Hotel in Los Angeles installed Youngstown Rigid Steel Conduit to protect wiring throughout its 13 stories. For the future, management can be sure that the electrical systems will be safe—adequately guarded against those enemies of all wiring jobs—water, moisture, vapors, dust and dirt.

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

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THE NEW BEAUTY OF CONCRETE MASONRY

"Architecturally proper" is a good way to sum up the fine appearance of the block wall of this modern masonry home. Vibrapac Block construction lends itself to permanence and shelter security.

The beauty of building with modern concrete block is this: It's *permanently* beautiful!

The precision-like beauty and simplicity expressed by pleasing new textures, patterns and colors in Vibrapac Block are always in "good taste" . . . for exteriors and interiors. Whatever your plans call for in terms of size, design or investment, there's a proper adaptation that's practical and effective in Vibrapac Block or Bes-Stone Split-Block.

Planter made with Bes-Stone Split-Block

The opportunities modern concrete masonry offers for building permanent beauty into homes (and other structures) include many practical advantages.

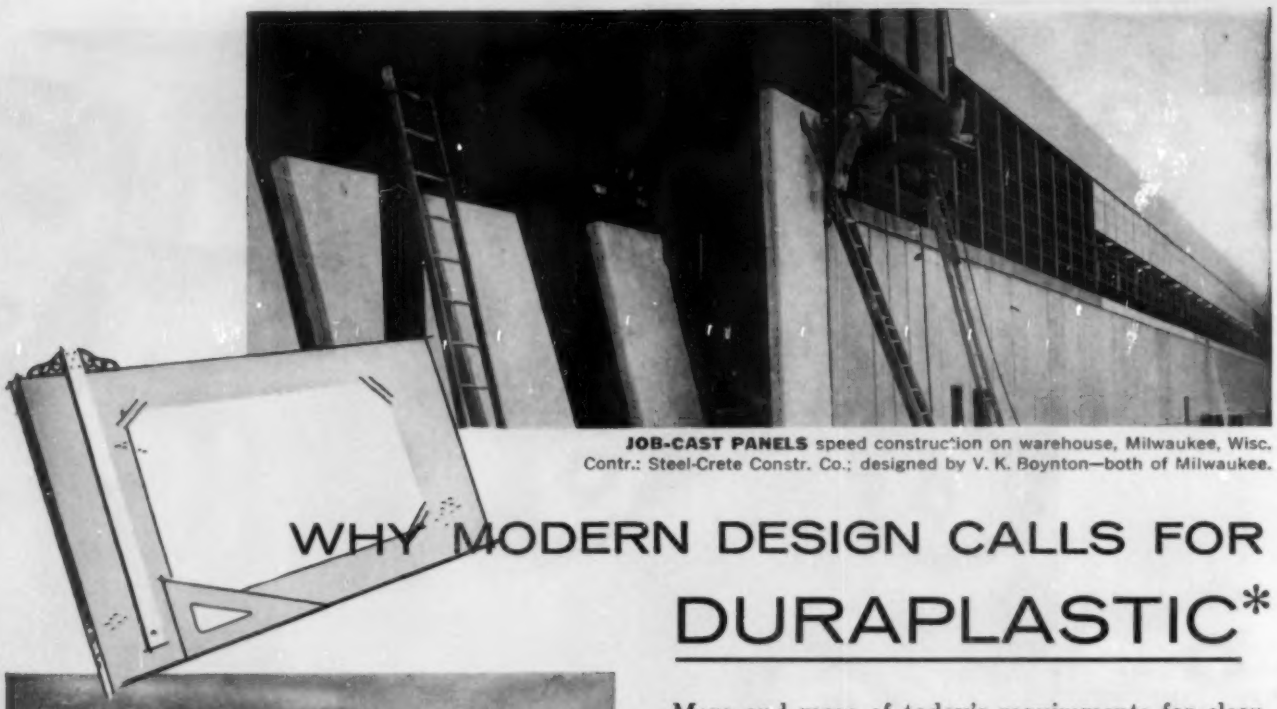
Obviously there's beauty *plus* fire safety in Vibrapac Block construction . . . and many other *plus* values such as: "built-in" insulation (due to the hollow block areas and multiplicity of tiny dead-air cells in the block itself) . . . assurance of comfortable inside atmosphere, summer or winter, with winter heating-economies, too . . . storm-safety, weather snugness . . . sound-absorbing qualities . . . permanent protection from termites and rodents, from damp-rot or deterioration by weather.

With all these and other *plus* values, the initial construction cost is low . . . financing becomes easier . . . insurance rates lower . . . upkeep, or maintenance, costs less . . . ideal structural flexibility is assured . . . good resale value is certain.

Ranch-house architecture is at its best when Vibrapac Block are used.

Charming beauty for interiors, too! For complete interior walls and ceilings (soffit block ceiling and roof construction), or for "accenting" details like floral bays, fireplaces, etc., modern concrete masonry offers countless opportunities for distinctive beauty and colorful beauty. "Charcoal gray" and "coral," as well as other good color schemes, are "naturals" for modern concrete masonry. Helpful literature gladly sent on request.

BESSER COMPANY, Box 177, Alpena, Michigan



JOB-CAST PANELS speed construction on warehouse, Milwaukee, Wisc. Contr.: Steel-Crete Constr. Co.; designed by V. K. Boynton—both of Milwaukee.

WHY MODERN DESIGN CALLS FOR DURAPLASTIC*

ARCHITECTURAL CONCRETE serves as both structural material and facing at high school, Williamsport, Pa. Contractor: Lundy Construction Co.; Architect: D. H. Grootenboer—both of Williamsport. Engineers: A. W. Lookup Co., Philadelphia, Pa.

DESPITE BELOW-ZERO WEATHER, concrete made with Atlas Duraplastic Cement stays plastic and workable at apartment building, Duluth, Minn. Contractor-Owner: W. C. Smith, Inc.; Architect: A. Reinhold Melander—both of Duluth.

More and more of today's requirements for clean, functional design are being met by concrete construction. And where *better* concrete is important, you'll often find it's made with Atlas Duraplastic air-entraining portland cement.

There's a reason. Duraplastic-made mixes are more workable, more cohesive... place better in forms and around reinforcement. Duraplastic Cement makes concrete with greater plasticity. Result: a more uniform concrete to place.

Atlas Duraplastic Cement requires less mixing water for a given slump . . . reduces water gain and segregation and, therefore, minimizes sand streaking and rock pockets. Result: a more uniform concrete *in* place.

Duraplastic-made concrete adds to concrete durability by fortifying it against the effects of freezing-thawing weather. It is superior for both structural and exposed surfaces.

Yet Duraplastic costs no more than regular cement, requires no unusual changes in procedure. Complies with ASTM and Federal Specifications. For descriptive booklet, write Universal Atlas Cement Company (United States Steel Corporation Subsidiary), 100 Park Avenue, New York 17, N. Y.

OFFICES: *Albany, Birmingham, Boston, Chicago, Dayton, Kansas City, Minneapolis, New York, Philadelphia, Pittsburgh, St. Louis, Waco.*

"Duraplastic" is the registered trade-mark of the air-entraining portland cement manufactured by Universal Atlas Cement Company.

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CLEAN, SIMPLE STYLING—NO FRILLS—NO PROJECTING PARTS

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WORK SAVING—requires no paint or putty . . . won't rust, rot, warp, stick or swell.

SAFE—positive, tamper-proof locking in closed position and in three ventilating positions.

50 STANDARD SIZES: All designs and sizes popularly specified for residential, commercial and monumental buildings supplied promptly. Standard windows up to six-foot height are available. Write for information on special sizes.

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● **PETERSON SETS THE PACE in the trend to aluminum windows. Peterson styling, advanced engineering and horizontal-slide operation are without equal. Thousands of installations coast to coast.**

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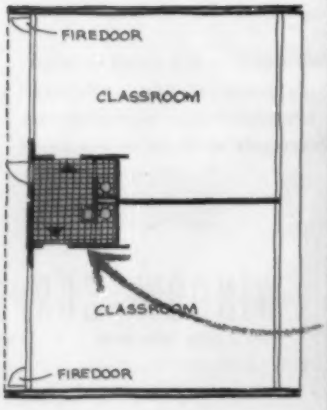
more color,

Library Facade, High School, New Bern, N. C.; Architects: Burett H. Stephens and Robert H. Stephens. Special Design in Suntile Ceramics—231 Pearl Grey; 204 White; 240 Red; 271 Turquoise.



Each two-classroom unit in this "cluster-plan" school has a practical vestibule-washroom-toilet area. Suntile Ceramics in contrasting colors help appearance and maintenance. Wall: 281 yellow. Floors: 240 Red, 271 Green. Hollow Tree Ridge School, Darien, Conn. Architects: Ketchum, Gina and Sharp.

ceramic *Suntile* means longer life, less up-keep for schools

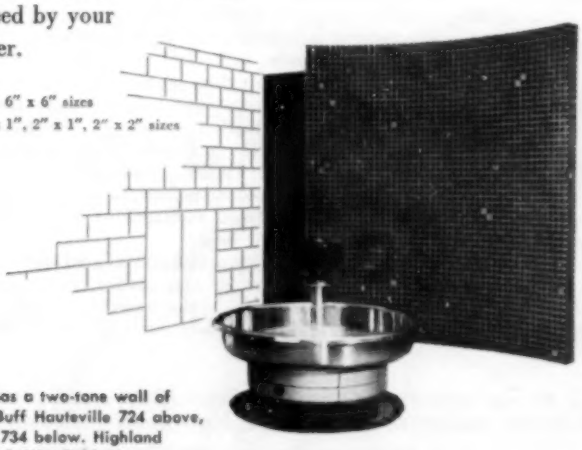
Pictured here are some of the many ways in which school architects are using beautiful ceramic Suntile as a triple-duty finish—colorful, economical, easily maintained.

For interiors, glazed Suntile* offers a permanent, impervious surface and a wide range of colors especially developed for school use by color authority Faber Birren.

Unglazed Suntile Satinized Ceramics, made in smaller sizes**, permit interesting effects of pattern and texture—in walls or floors, indoors or out.

Whatever type Suntile you use, you can depend on proper installation—it's guaranteed by your Suntile dealer.

*4¼" x 4¼" and 6" x 6" sizes
**½" x 1½", 1" x 1", 2" x 1", 2" x 2" sizes



Sunny corridor has a two-tone wall of glazed Suntile—Buff Hauteville 724 above, Grey Hauteville 734 below. Highland Elementary School, Westfield, Mass. Architect: James A. Britton.

Wainscot in Suntile Ceramics combines #121 Larkspur Range, 231 Pearl Grey and 25 Dresden Blue to produce a lasting, gay pattern. Fox Point Elementary School Corridor, Providence, R. I. Architects: Cull and Robinson.

Curved Wall of 230 Black Suntile Ceramics with accents of 243 Pink and 281 Yellow serves both as a practical splash-back and a center of decorative interest. Meadow Lane School, Meadow Lane, N. Y. Architects: Ketchum, Gina and Sharp.

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North,

Beautiful, radiant-heated Paramus (N.J. Memorial School

East,

Modern Lakeview School, Vass, N. Carolina is, naturally radiant heated

Washington-Douglass Elementary School, Jackson, Tenn., modern as its radiant heating

South,

West,

Attractive radiant-heated Rosemead High School, Los Angeles, Calif.

radiant heating does it best!

We may be amused by the overworked expression, "from the rock-bound coast of Maine to the sun-kissed shores of California" . . . but that phrase well describes the sweep of the school-design revolution that is obvious everywhere.

Pride of our land, the magnificent schools are a credit to our national maturity and are receiving more specialized attention than perhaps any other type of building. Common sense, not indulgence, indicates that facilities that protect the health and well-being of students also promote the feeding of their minds.

Thus, among the considerations of lighting, ventilation, sanitation, recreation and heating, *radiant* heating is widely adopted as one of the most healthful. Its gentle, all-permeating, sun-like warmth . . . free from drafts, dust-laden currents and hot or cold spots . . . is ideal. Other advantages include concealed heating sources that thwart vandalism, promote safety, save floor and wall space and improve classroom appearance. Yes, from auditorium to gymnasium, from office to classroom, radiant heating "does it best."

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Typical classroom radiant-heating installation

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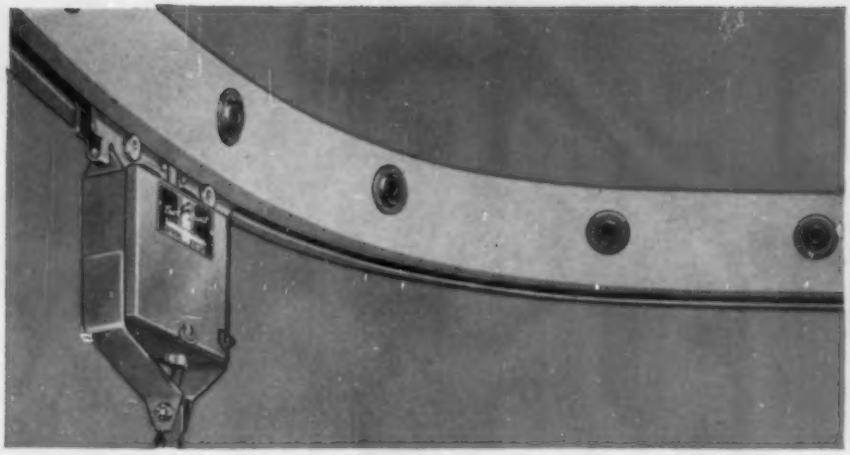

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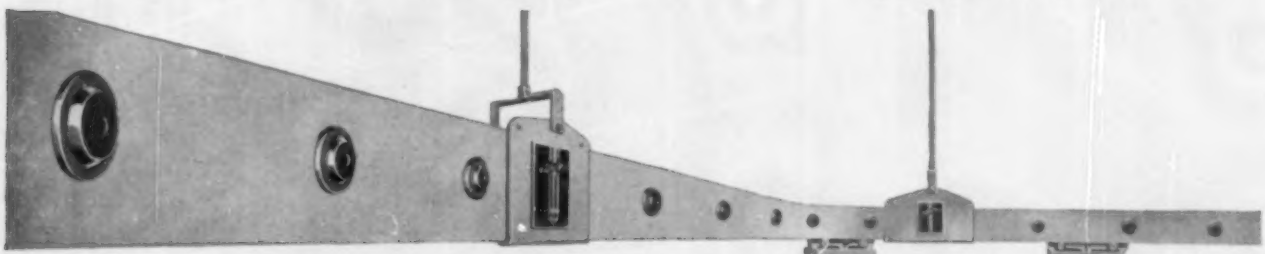

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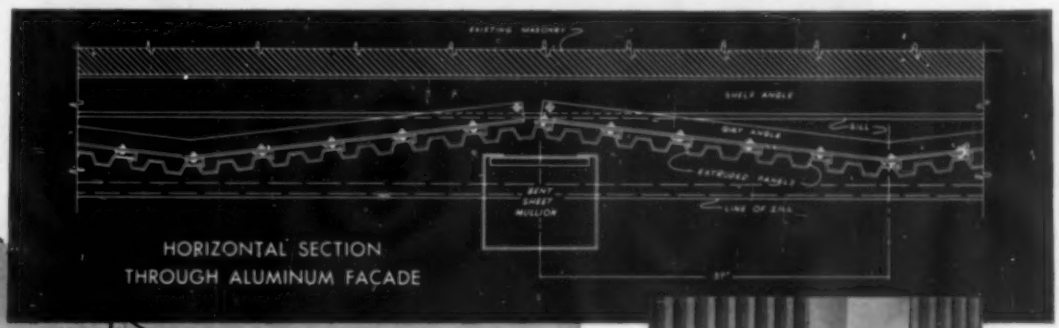
REYNOLDS

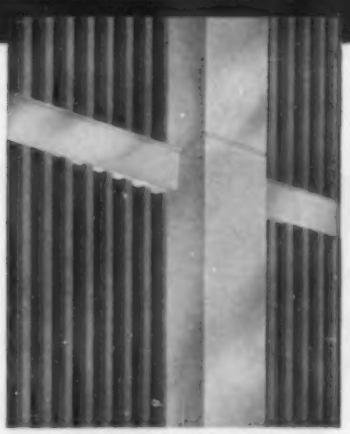
The transformation of Thalhimers is the first department store application of this interesting modernization method—distinguished by unusual architectural treatment in its extruded aluminum spandrels anodized grey.

The principle is to enclose a group of buildings, both new and old, within a complete new shell—remodeling and air-conditioning the original interior.

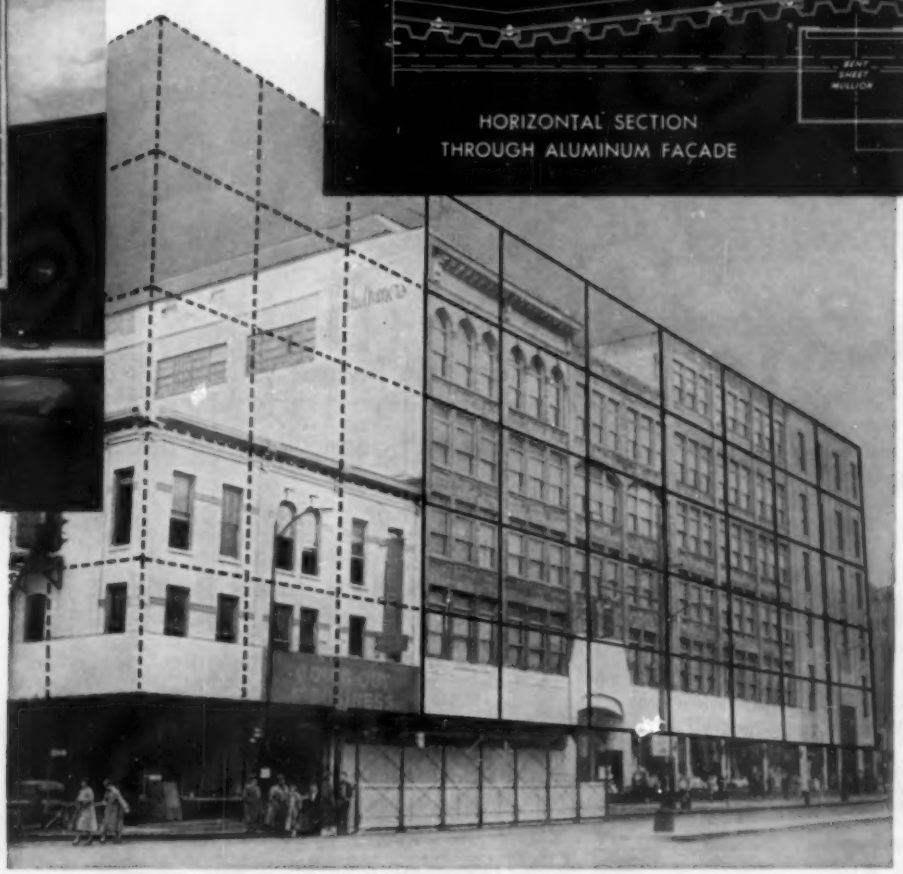
Aluminum is ideal for this method. It makes possible a light, strong exterior shell that is easy to erect. Its freedom from rust and resistance to corrosion minimize maintenance. Its radiant heat reflectivity can be utilized to add insulation value.



HORIZONTAL SECTION
THROUGH ALUMINUM FAÇADE



DETAIL OF SPANDREL,
MULLION AND PILASTER



Overlaid lines show how the Thalhimers buildings will be enclosed by an all-aluminum shell — all Reynolds Aluminum except for ground floor display windows. Spandrel panels are extruded aluminum, anodized grey. Horizontal mullions and pilasters are natural color aluminum formed sheet. Dotted lines indicate how the entire buildings at the left corner will be replaced by a new structure.

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THEY LOOK ALIKE...

One door is hung on a RIXSON offset style closer—
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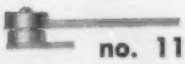
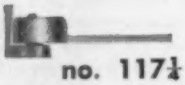
Pivot sets are furnished complete with matching top pivot.

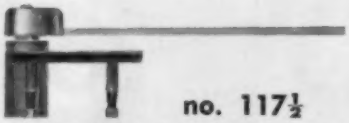
4 *offset hung types for doors of varying sizes and styles*



no. 117
Fastened to floor. Offset type for light interior doors.



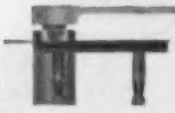
no. 117¼
Fastened to jamb. Offset type for light interior doors.



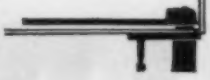
no. 117½
Mortised into floor. Offset type for entrance, vestibule, and heavy interior doors.

no. L117
Mortised into floor. Offset type for extra heavy or lead-lined doors.

center hung type...



no. 117¾ Mortised into floor. Center hung for entrance, vestibule, and heavy interior doors.



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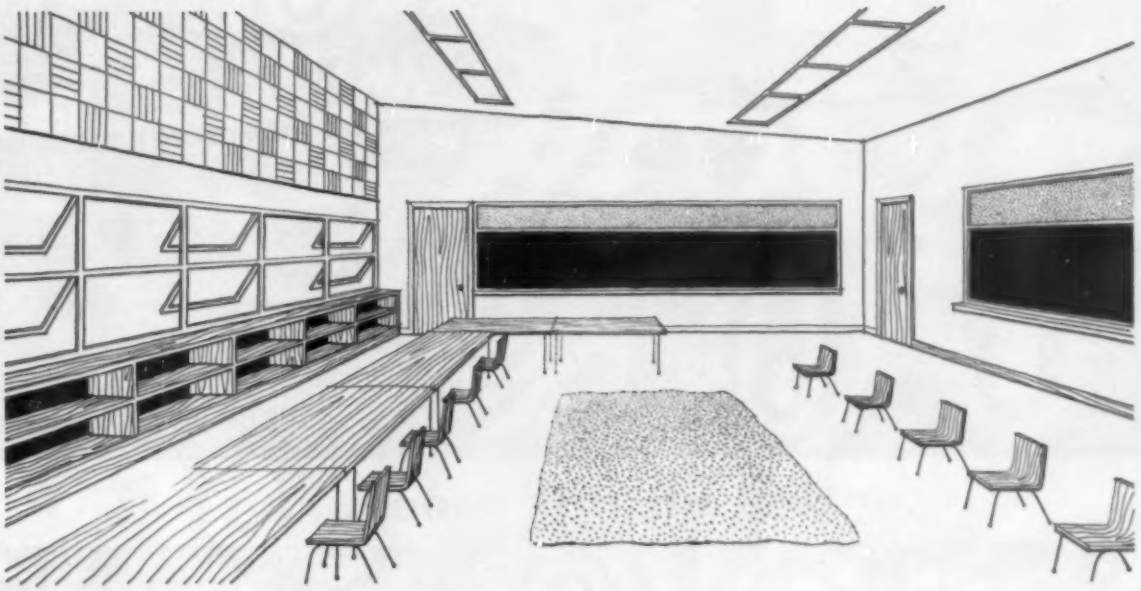

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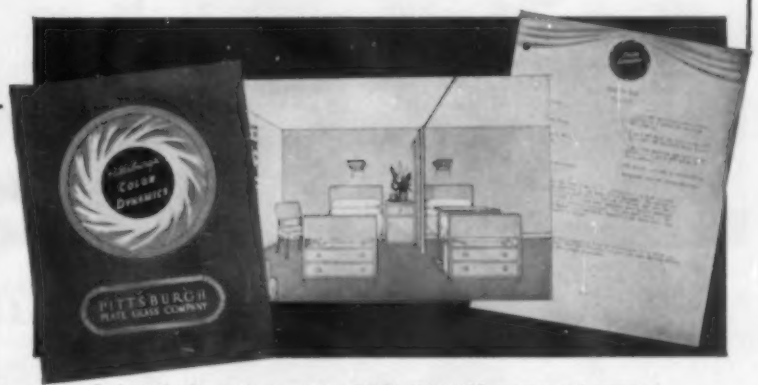

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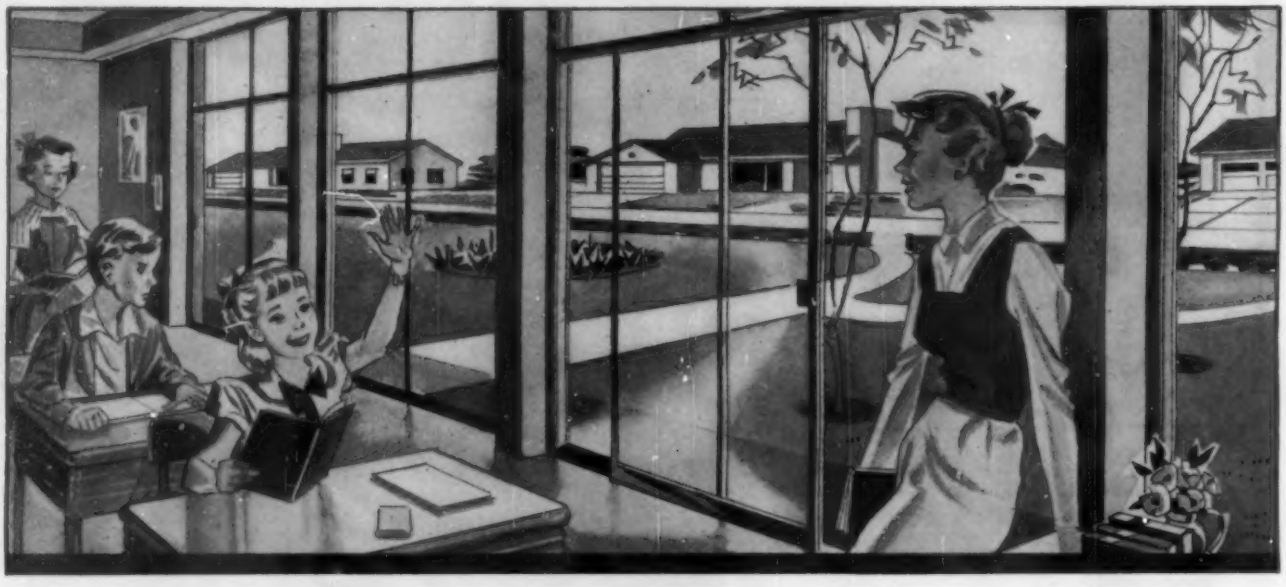

to this room for their sake

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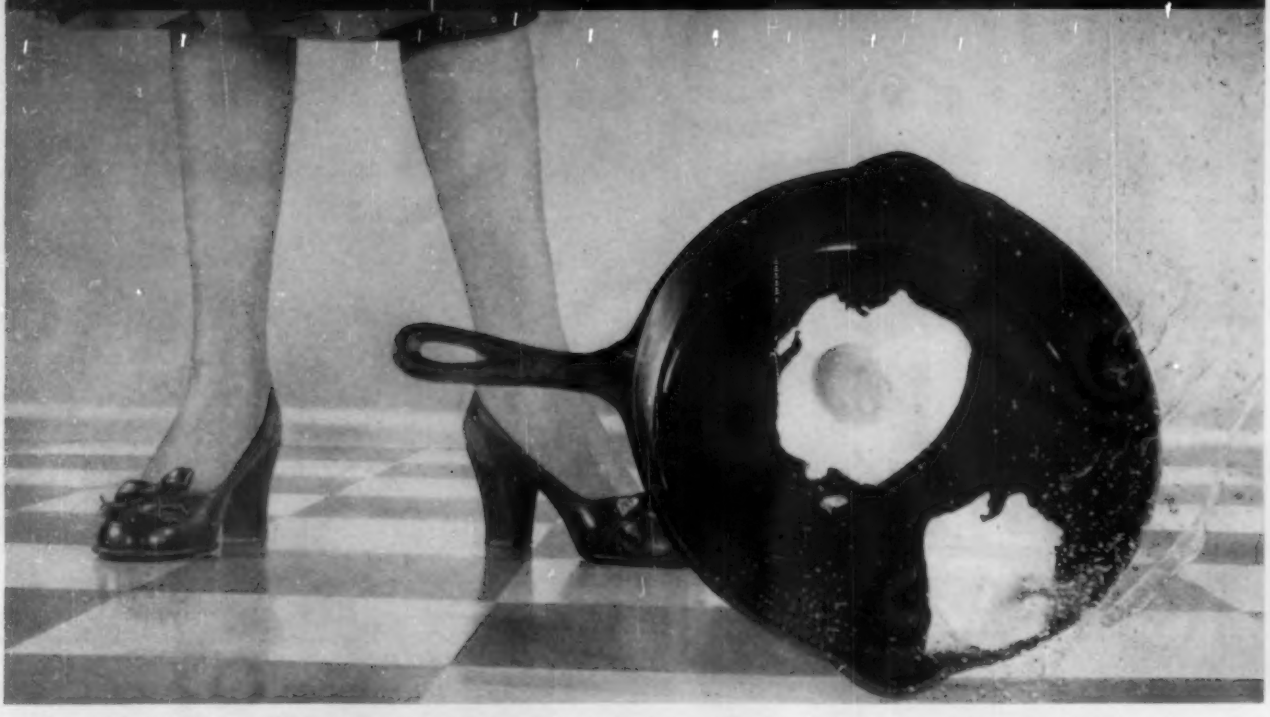

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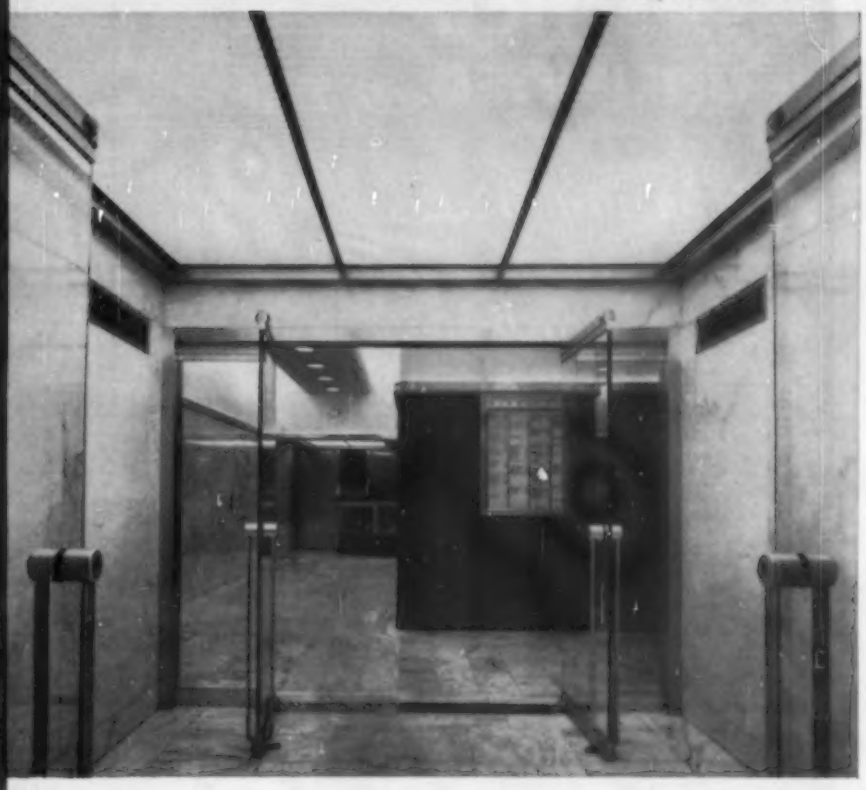
light

Blue Cross Office Building
Philadelphia, Pa.



PITTSBURGH LUMA-CEILINGS

A NEW CONCEPT IN LIGHTING...

The Luma-Ceiling is Pittsburgh Reflector Company's answer to the need for an all-purpose illumination source that is simple to install and easy to maintain. Light from Luma-Ceiling is soft and diffused with a quality similar to indirect lighting; no sharp shadows or contrasts are evident.

Pittsburgh's Luma-Ceilings have been used successfully in office buildings, laboratories, libraries, showrooms and a wide range of similar installations. Wherever they have been used, people who have worked with this type of lighting consider it the most ideal lighting medium yet devised.

The ceiling itself is a combination of translucent, corrugated, white vinyl plastic supported in extruded aluminum channels; the light source is either Pittsburgh Standard Fluorescent or Pittsburgh Slimline Strip.

ADVANTAGES

TO THE OWNER

- Economical initial cost
- Diffused glare-free illumination
- Controllable light levels, if required

TO THE ARCHITECT

- Applications unlimited in new work or modernization
- Economical ceiling construction
- Obstruction-free ceiling plane

TO THE CONTRACTOR

- Easiest ceiling lighting system to install
- Underwriters' Laboratories listed
- A standard line, replacement parts are always available

See How Pittsburgh Luma-Ceilings can fit into your lighting picture. Bulletin 10 gives complete details; write for it.

PITTSBURGH REFLECTOR COMPANY

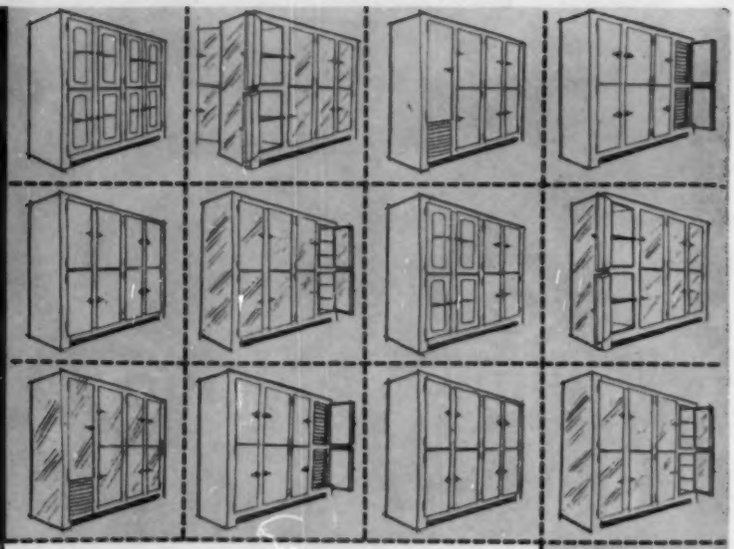
421 OLIVER BUILDING · PITTSBURGH 22, PA.

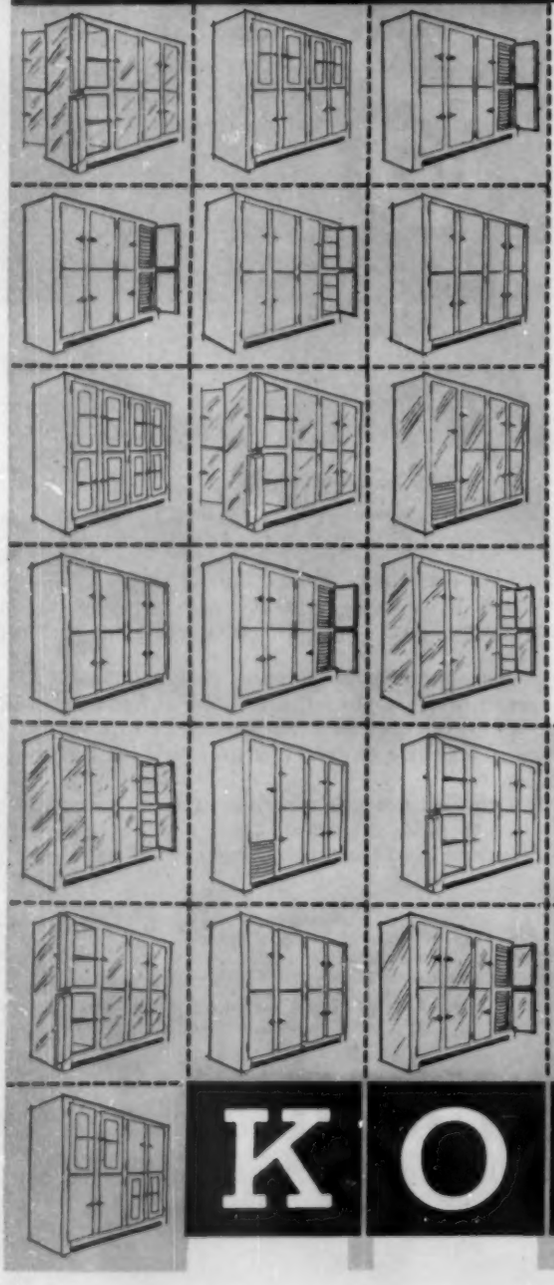
IN CANADA—Holden Lighting Manufacturers, Ltd.
15 Yorkville Avenue Toronto, Ontario

DISTRIBUTED BY ELECTRICAL WHOLESALERS EVERYWHERE • PERMAFLECTOR LIGHTING ENGINEERS IN PRINCIPAL CITIES

SELECTION UNLIMITED...

from just ONE standard model Koch Reach-In Refrigerator





They're all one model, made for different applications . . . proof of Koch flexibility!

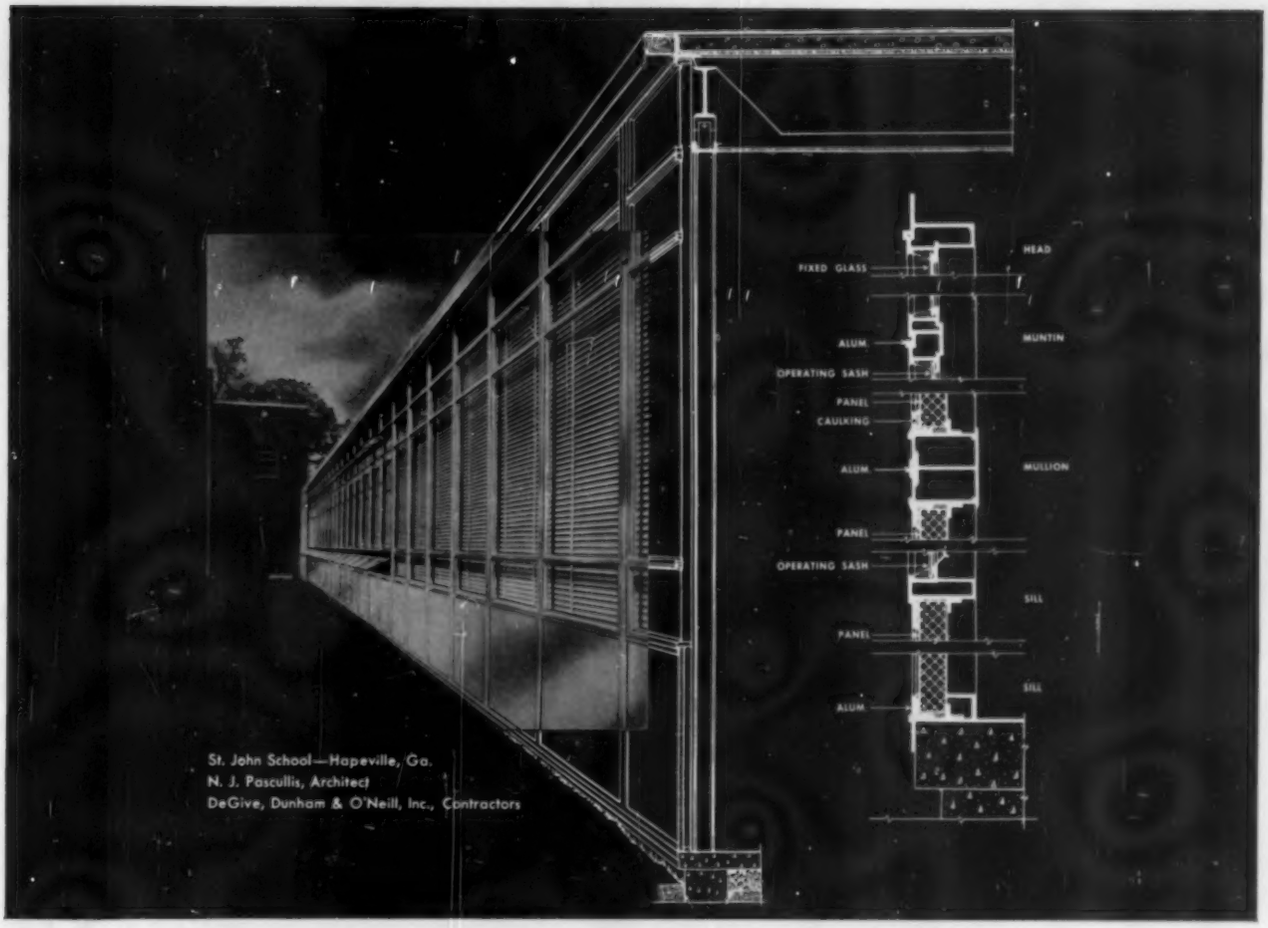
Select the model required . . . then choose the features desired. Koch will produce this model exactly to your specifications. Koch production flexibility permits the manufacture of a "custom-made" refrigerator, usually from a standard model, at little or no extra cost.

With Koch you have an unlimited selection of features like porcelain or stainless steel finishes, glass or solid doors, front opening or "pass-through" arrangements, standard shelves or Koch Food-File . . . no matter what the application, Koch has the refrigerator to fit.

When you specify KOCH, you specify quality and refrigeration experience since 1883. Write today for the Koch catalog.

KOCH

refrigerators, inc.
KANSAS CITY 15, KANSAS



Georgia School System Solves Twofold Problem With BROWN & GRIST Window Walls

Specify Brown & Grist Window Walls For:

- ***Fast, Simple Erection***
- ***Savings in Construction & Labor***
- ***High-strength, Light weight***
- ***Beauty and Durability***
- ***Flexibility in Design & Materials***
- ***Low Maintenance***

The problem was how to construct, within a modest budget, 11 modern school buildings of functional design and distinctive appearance. Working with their architect, the School Building Authority solved the problem with Brown & Grist window walls. This new kind of wall system offered numerous advantages such as: flexibility of design and materials—beauty—light weight—good insulation—quick, simple erection—low maintenance—superior weatherproof ventilation—greater floor space . . . and other definite advantages yet at a lower cost than for old style walls. It was a unique solution to a frequent problem yet with substantial savings. For full details on this new type wall construction call, write or wire Brown & Grist. Our engineers will work closely with you in meeting your *own* specifications . . . after all, custom work is a Brown & Grist custom . . .

B·G

BROWN & GRIST, Inc.

25 Tyler Avenue • Warwick, Virginia • Phone 8-1559

Masonite Ridgewood effectively used on a home in Ashlan Park, the new George Workmon development in Fresno, California.

For that "satin luster look"—
choose new MASONITE RIDGEWOOD

Here's a new way to add design interest to your exteriors. Use Masonite's new Ridgewood, the hardboard panel with a combed, textured surface.

Use it as a distinctive vertical panel, with or without battens as a novel and pleasing variation in horizontal siding, or as a non-splitting shingle. Painted, it reveals a rich, satiny luster with great eye-appeal.

Ridgewood is a Tempered Presdwood® product—¼" thick—with all the paintability, weather resistance and firm protection these famous panels are noted for. Wide 4′ panels mean fewer joints—and the textured surface makes joints almost invisible.

Idea: Ridgewood for dramatic interior walls in homes, offices and commercial buildings.

To get complete data, write Masonite Corporation, Dept. PA-7, Box 777, Chicago 90, Illinois.

Look For This Man—He Makes The Difference

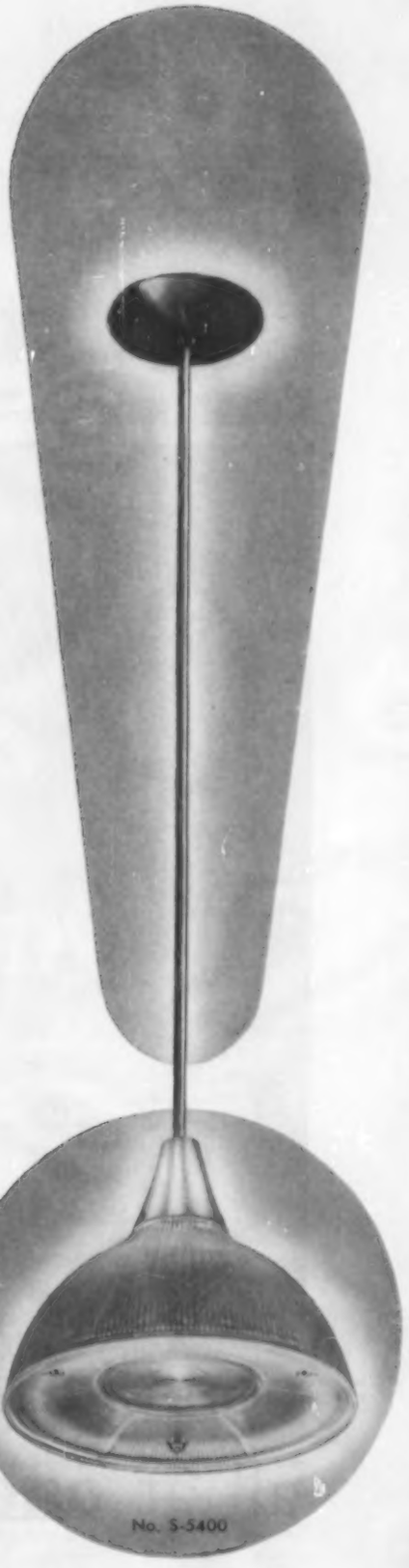
MASONITE RIDGEWOOD

PANEL PRODUCT OF MASONITE® CORPORATION

new...

the most advanced achievement in fifty-seven years of lighting research . . . the incomparable

PARADOME*



The finest semi-direct lighting unit ever engineered for balanced-illumination in

CLASSROOMS, MODERN OFFICES, SHOPPING CENTERS, PUBLIC INSTITUTIONS . . .

Through an altogether new idea, using a concave circular CONTROLENS* and a new Prismatic Reflector enclosed in a special fiber-glass (FIBERGLO*) cover, an extraordinary control of light is achieved. Maximum illumination is directed to vital areas with the best visual comfort and lowest brightness. Paradome's graceful design conforms with all modern interiors—particularly today's classrooms.

Write for complete engineering data on Paradome. No obligation.

Lighting Authorities Since 1898

Holophane

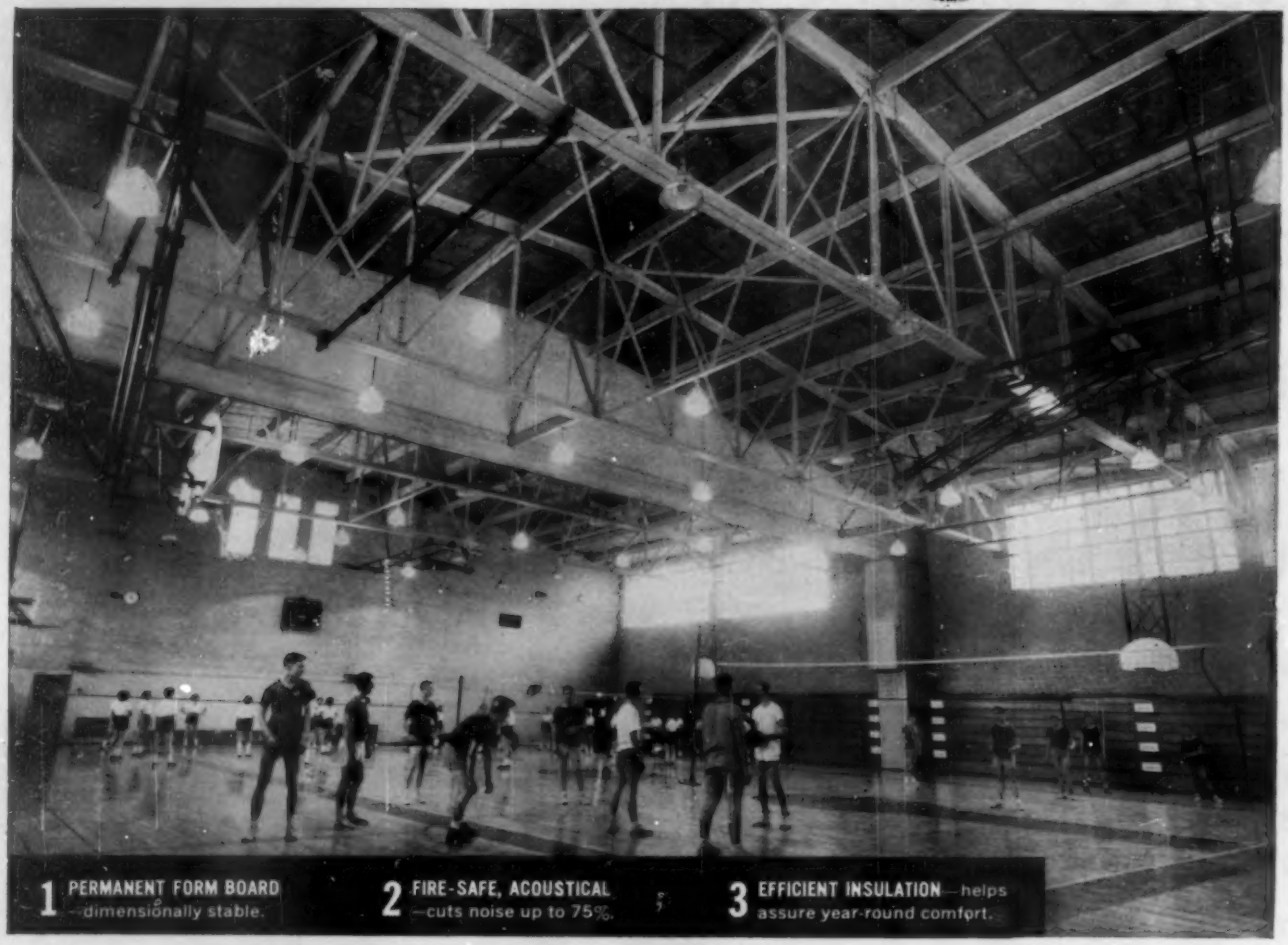
For Better Lighting . . . Be Specific . . .

HOLOPHANE COMPANY, Inc. • 342 Madison Avenue, New York 17, N. Y.
The Holophane Co., Ltd., The Queensway, Toronto, Ont.

HOLOPHANE

This Clayton (Mo.) High School Ceiling

Architect — William B. Ittner, Inc., St. Louis; **General Contractor** — E. A. Brunson Construction Company, St. Louis; **Form Board Applicators** —E. R. Lindberg Company, St. Louis.


1 PERMANENT FORM BOARD —dimensionally stable.
2 FIRE-SAFE, ACOUSTICAL —cuts noise up to 75%.
3 EFFICIENT INSULATION— helps assure year-round comfort.

combines **3 extra-value** features... all at **one low cost!**

Fiberglas* Acoustical Form Board offers extra advantages and extra economies. It's ideal for poured-in-place roof decks on schools, shopping centers, industrial buildings and recreational centers. The cost of approximately 50¢ per sq. ft. (based on approximately 25,000 sq. ft.) covers *everything*—form board, acoustical ceiling and roof insulation.

For complete technical data on Fiberglas Acoustical Form Board, write Owens-Corning Fiberglas Corporation, Dept. 63-G, Toledo 1, Ohio.

OWENS-CORNING FIBERGLAS

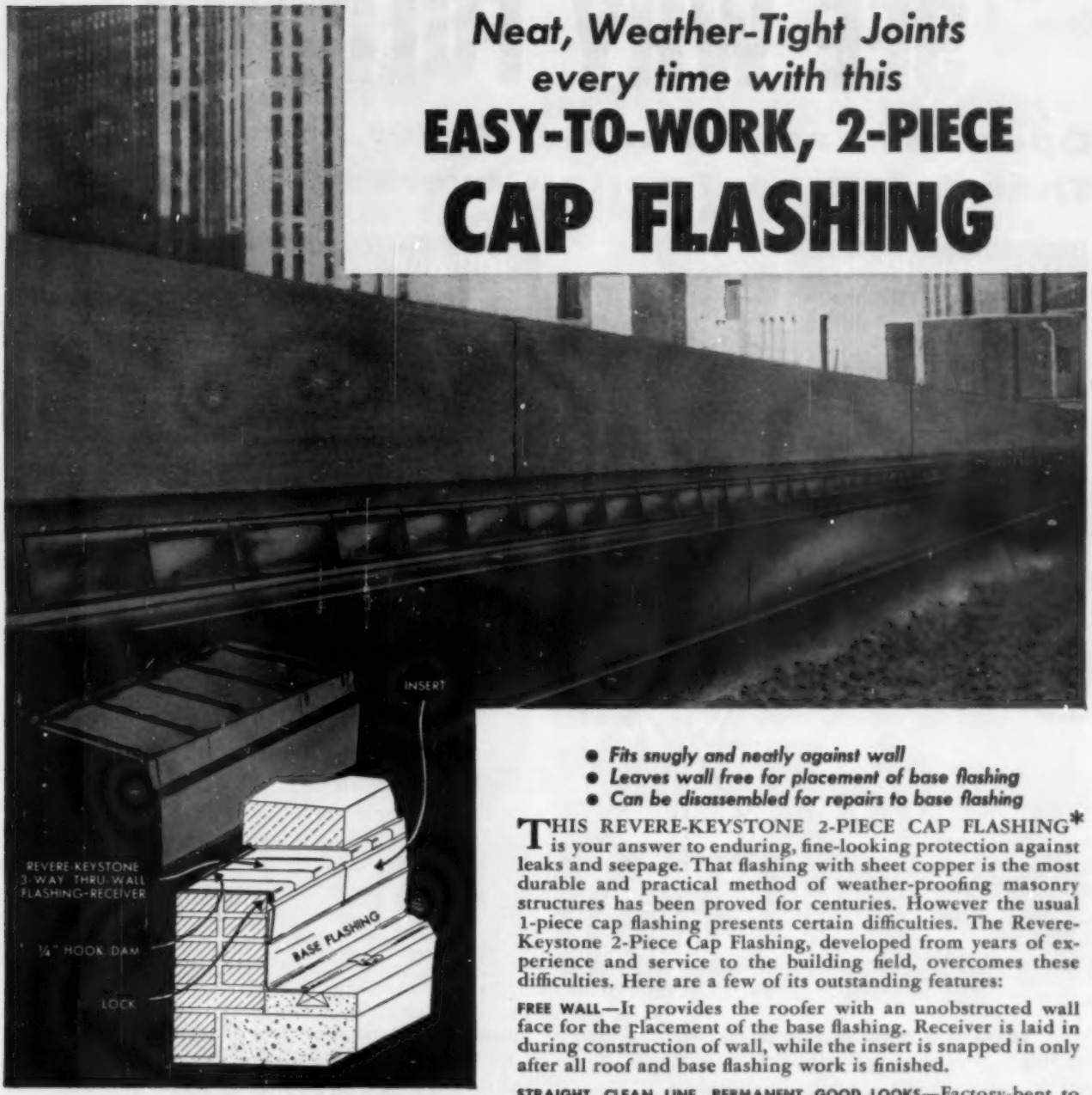
ACOUSTICAL FORM BOARD

Sound Control Products • Roofing Insulations • Electrical Insulation • Duct Insulations • Low Temperature Insulations

*T.M. Reg. U. S. Pat. Off. Owens-Corning Fiberglas Corp

Neat, Weather-Tight Joints every time with this

EASY-TO-WORK, 2-PIECE CAP FLASHING



Top photo shows a typical installation of the Revere-Keystone 2-Piece Cap Flashing of all-copper construction. Note the snug fit and neat appearance.

Insert is furnished in 51" lengths, for recommended overlap of 3" minimum. Width is 4" on exposed face, to allow for a minimum 3" overlap of the base flashing.

Receiver is furnished in 49" lengths (48" layup), with 1" overlap in a locking tongue dam which assures proper alignment. REVERE-KEYSTONE 2-PIECE CAP FLASHING IS AVAILABLE IN TWO IN-THE-WALL FORMS.

a) Standard 4" flat copper receiver; with ¼" hook dam.
b) Combination receiver and thru-wall flashing (shown in isometric above).

SEND TODAY FOR THIS DESCRIPTIVE FOLDER ON THE REVERE-KEYSTONE 2-PIECE CAP FLASHING FOR YOUR FILES. IT GIVES FULL CONSTRUCTION DETAILS!

- *Fits snugly and neatly against wall*
- *Leaves wall free for placement of base flashing*
- *Can be disassembled for repairs to base flashing*

THIS REVERE-KEYSTONE 2-PIECE CAP FLASHING* is your answer to enduring, fine-looking protection against leaks and seepage. That flashing with sheet copper is the most durable and practical method of weather-proofing masonry structures has been proved for centuries. However the usual 1-piece cap flashing presents certain difficulties. The Revere-Keystone 2-Piece Cap Flashing, developed from years of experience and service to the building field, overcomes these difficulties. Here are a few of its outstanding features:

FREE WALL—It provides the roofer with an unobstructed wall face for the placement of the base flashing. Receiver is laid in during construction of wall, while the insert is snapped in only after all roof and base flashing work is finished.

STRAIGHT CLEAN LINE, PERMANENT GOOD LOOKS—Factory-bent to precise dimensions. This, with the one-inch locking tongue, assures alignment of receiver slots, uniform appearance.

PERFECT WEATHER-SEAL—Factory-formed angles on the receiver and insert cause latter to hug the base flashing, weather-seal effectively. Water cannot blow up behind flashing.

VERTICAL RECEIVER SLOT ON WALL FACE—Position of vertical receiver slot on face of wall eliminates possibility of the receiver slot being crushed shut by weight of masonry.

CAN BE DISASSEMBLED—Insert can be removed with a simple tool and used again, with no loss of neatness or snugness, when the built-up base flashing or roofing have to be repaired.

*Patented June 9, 1953—No. 2,641,203. Other Pats. Pend.

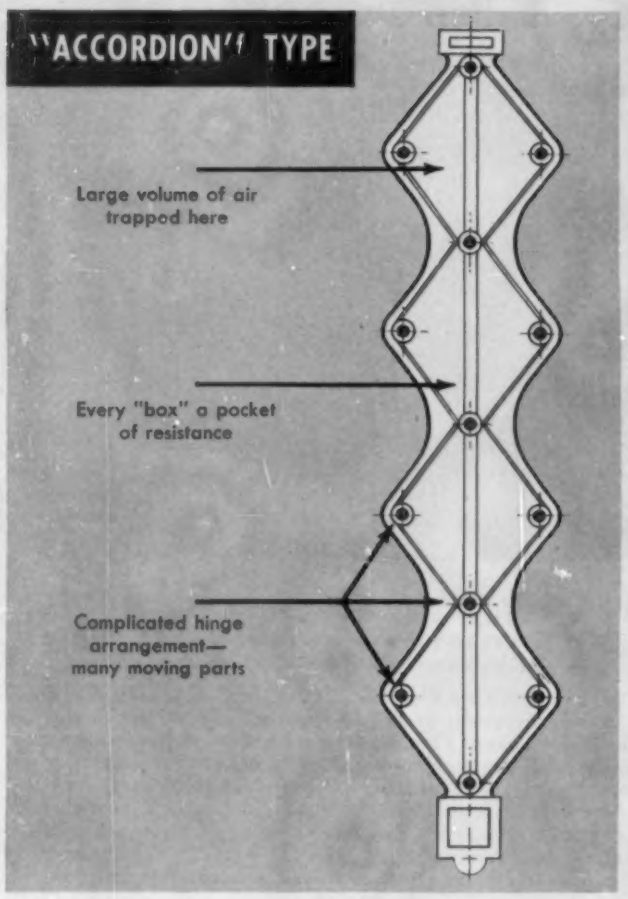
REVERE

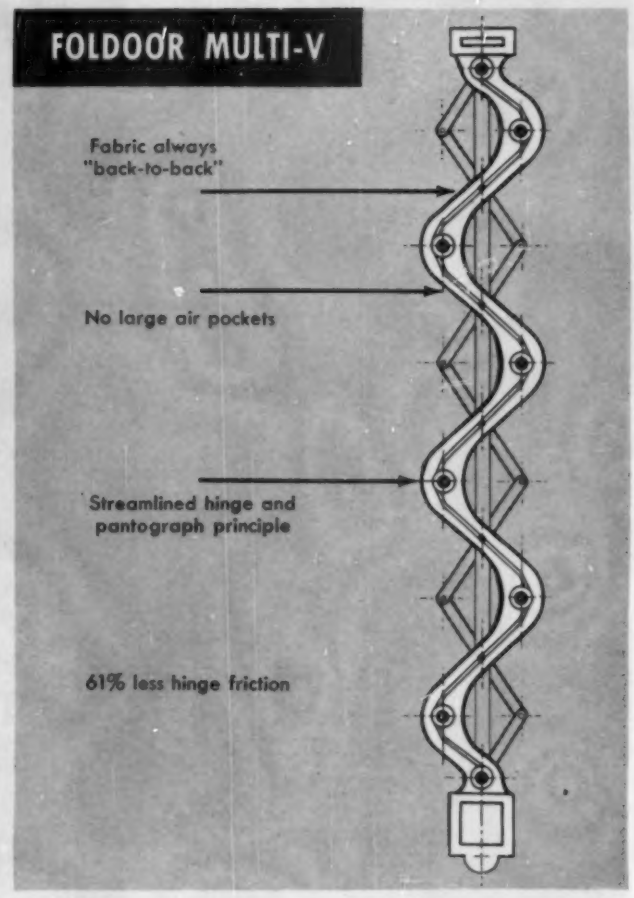
COPPER AND BRASS INCORPORATED

Founded by Paul Revere in 1801
230 Park Avenue, New York 17, N. Y.
Mills: Baltimore, Md.; Brooklyn, N. Y.; Chicago, Clinton and Joliet, Ill.; Detroit, Mich.; Los Angeles and Riverside, Calif.; New Bedford, Mass.; Newport, Ark.; Rome, N. Y.
Sales Offices in Principal Cities, Distributors Everywhere

SEE WHY FOLDOOR

Operates Easier...Looks Better...Lasts Longer Than Any Other Fabric-Covered Folding Door


"ACCORDION" TYPE
Large volume of air trapped here
Every "box" a pocket of resistance
Complicated hinge arrangement—many moving parts



There is a difference in fabric-covered folding doors! Only Foldoor offers Multi-V construction which provides easier operation, smarter appearance, longer life.

In direct contrast to "accordion" type doors, Foldoor is constructed in continuous volutes. The fabric coverings are back to back. There are no "pockets" to trap large volumes of air which sets up resistance, retards ease of operation.

In addition, Foldoor's simplified construction has 61 per cent less hinge friction. Yet it provides more *working* metal per foot of opening with less dead weight. What's more, the same 16-gauge hinge is standard on all Foldoors *regardless of size*. Foldoor has the narrowest profile, too—a stack width of 5½". Streamlined pantograph action lets it stack into just 1½" per foot of opening.

And only Foldoor offers a track truly concealed, plus an attractive cornice when desired.

There's a *big* difference in fabric-covered folding doors. You get more with Foldoor everytime. So specify Foldoor.

For further information see: Sweet's Catalog; Foldoor installing distributors in every principal city; or Holcomb & Hoke Mfg. Co., Inc., 1545 Van Buren St., Indianapolis 7, Indiana. IN CANADA: Foldoor of Canada, Montreal 26.

HOLCOMB & HOKE
FOLDOOR
THE SMARTEST THING IN DOORS
®

HERE'S PROOF YOU CAN

STOP WASTEFUL and NEEDLESS MAINTENANCE EXPENSE

BUILT in 1937, and not one penny spent for painting or maintenance of the aluminum windows in 16 years!

HARRISON High School, Harrison, N. Y.
Architect: Robert Vignola

insist on *Quality Approved* ALUMINUM WINDOWS

Experience in hundreds of schools (like the one shown above), in hospitals and in other buildings erected 15 to 25 years ago shows that aluminum windows save many dollars each year on painting alone.

If you are planning new school buildings or additions to old ones, make sure you include "Quality-Approved" aluminum windows. It's the one sure way to keep maintenance costs at a minimum—to save important maintenance dollars year after year.

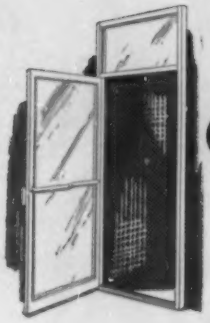
"Quality-Approved" aluminum windows are available through many reputable manufacturers in sizes and styles (awning, casement, double-hung, projected and sliding) that fit any exterior design treatment. For your protection and full satisfaction, insist on aluminum windows that carry the "Quality-Approved" seal when you specify or OK specifications.

For a copy of our 1955 Window Specifications Book and names of approved manufacturers, write to Dept. PA-7.

Aluminum Window Manufacturers Association

74 Trinity Place, New York 6, N. Y.

MEMBERS: Alcasco Products, Inc., Muskegon, Mich. • Aluminum Home Products Co., Knoxville, Tenn. • The Wm. Bayley Co., Springfield, Ohio • Coco Steel Products Corp. *(Sterling Aluminum Window Division)*, Chicago, Ill. • Cupples Products Corp., St. Louis, Mo. • Fentron Industries, Inc., Seattle, Wash. Michael Flynn Mfg. Co., Philadelphia, Pa. • General Bronze Corp., Garden City, N. Y. • Hunter Mfg. Corp., Bristol, Pa. • Metal Arts Mfg. Co., Inc., Atlanta, Ga. • Reynolds Metals Co. *(Parts Division)*, Louisville, Ky. • J. S. Thorn Co., Philadelphia, Pa. • Universal Window Co., Berkeley, Calif. Ware Laboratories, Inc., Miami, Fla. • Windalume Corp., Kenvil, N. J.



OPENED HOW MANY TIMES A DAY

BY ATTACHING a mechanical counter, a restaurant owner found that his door was opened 2350 times per average day. That's more than 735,000 times a year excluding Sundays. So before you choose an entrance, think of the abuse it has to take.

Brasco Aluminum Entrances are made to take it with nary a groan, squeak or sag. Stiles and rails are not just welded . . they're thru-bolted AND welded for extra strength where you need it most. Also, our larger cross section areas provide for extreme rigidity.

Consider the constant wear on hinges. Brasco hinges are made of heavy aluminum extrusions, with wear-resistant Oilite bronze bearings that *never* require lubrica[illegible]. In fact every part of a Brasco Entrance is engineered and fabricated for long and hard service.

All this and high style too for the busiest part of the building. For more particulars about Brasco Entrances please address Dept. P 507.

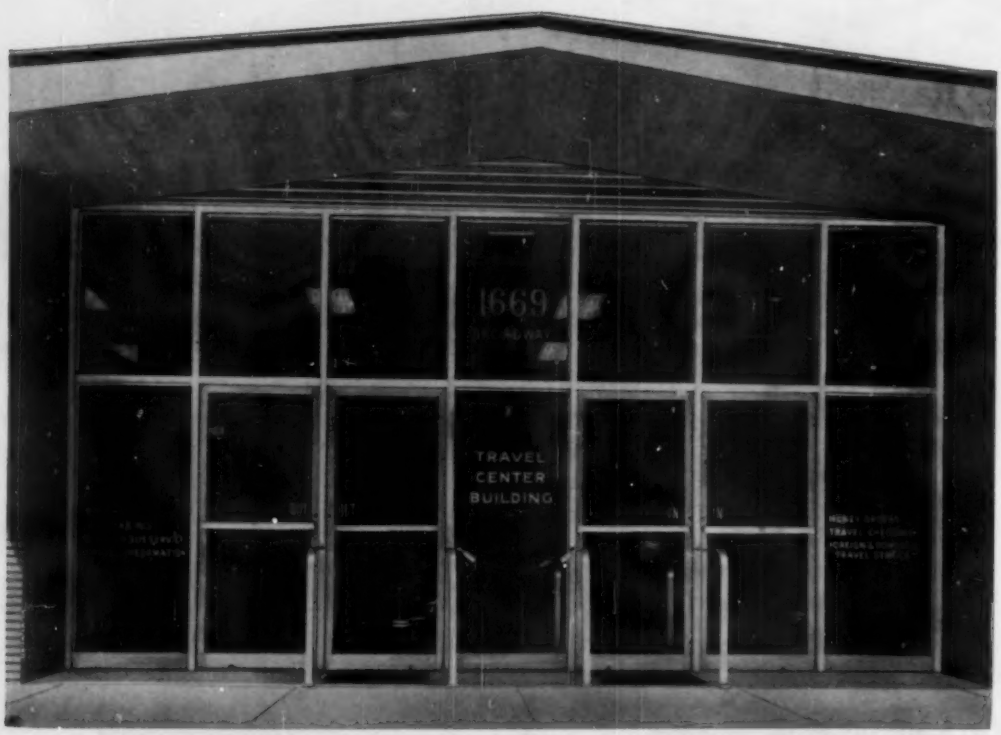
Continental Trailways
Terminal Building, Denver

★

Architect,
Alfred Watts Grant, A.I.A.

★

Brasco Entrances Installed
by Western Glass Company

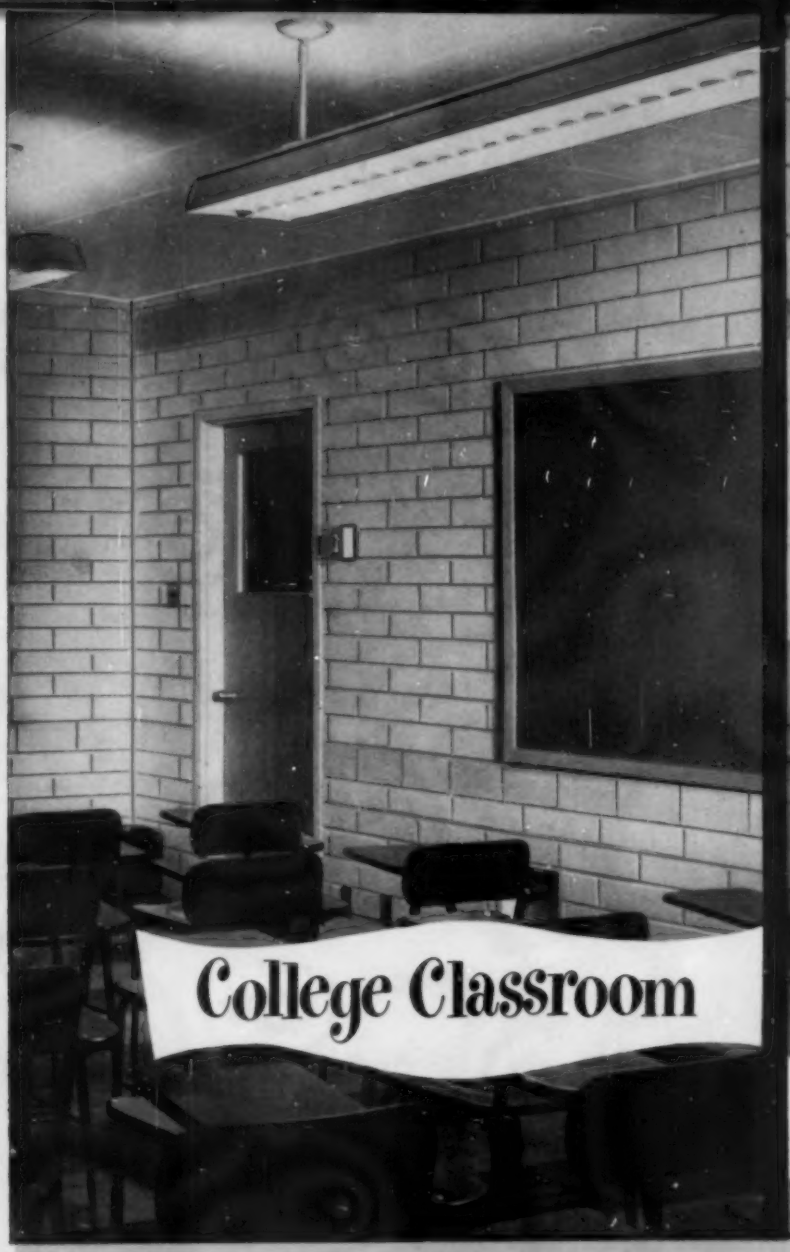


YOU'LL GET BETTER RESULTS WITH BRASCO

STORE FRONTS
Brasco
ENTRANCES

MANUFACTURING CO. HARVEY, ILLINOIS

Metal Store Front Specialists for more than 40 Years



College classroom: architect, Fred Markham, A.I.A.
Elementary school: architect, William Rowe Smith, A.I.A.

For "sound-conditioned" classrooms, it's

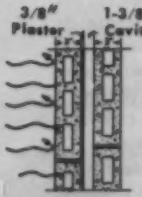
Concrete Masonry — *cuts costs, too!*

Designers of classrooms for colleges and elementary schools face some common problems these days: both must keep costs to a minimum, yet supply classrooms that have a low noise level and are easily maintained. Concrete masonry offers several important savings:

Save on interior finishing: Attractive wall patterns, textures, and colors in today's concrete masonry units make possible decorative interior walls that need no expensive plastering or dry wall treatment — a big saving in cost.

Save on construction cost: Concrete masonry usually costs less installed in the wall than any other permanent building material; modular size units eliminate costly cut and trim.

Save on acoustic treatment: Concrete masonry walls and partitions combine strength, durability, and fire-resistance with efficient, "built-in" noise reduction values (see detail below). Usually exposed block classroom, gymnasium, auditorium, and corridor walls need no additional acoustic treatment.



Lightweight concrete masonry cavity partition wall will absorb up to 55% of sound striking wall, and reduce sound transmission from room to room about 55 decibels.

Hard plaster or glass absorbs only about 3% of incident sound—97% "bounces back."

National Concrete Masonry Association
38 South Dearborn Chicago 3, Illinois

SIMPSON CERTIFIED ACOUSTICAL CONTRACTORS
USING GENUINE Simpson ACOUSTICAL PRODUCTS

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rely on Simpson FOREST PRODUCTS OF INTEGRITY

Look where Simpson Forestone® has gone in one short year

Simpson, a leader in the acoustical field, created *Forestone*, the world's only fissured woodfiber tile. The recent Forestone installations named on the background of this advertisement demonstrate the demand for and acceptibility of this exciting new product for installations of *every* type.

Fissured for beauty
woodfiber for economy

Forestone is available through the Simpson Certified Acoustical Contractors listed at left.

Ask the Simpson Certified Acoustical Contractor nearest you to show installations or photos . . . or mail this coupon today for more information

SIMPSON LOGGING CO.
1004 White Bldg., Seattle 1, Wash.

Please send full details on Forestone Acoustical Tile

NAME _____

ADDRESS _____

CITY _____

STATE _____

AC-54

SIMPSON LOGGING COMPANY • SHELTON, WASHINGTON

for problem floors

When you select flooring materials for unusual or severe conditions, look into the unusual combinations of properties offered by the five types of resilient tiles made by Kentile, Inc. In practically every case, one of them will be just right for the job, whether conditions call for serviceability under heavy foot or industrial traffic, ease of maintenance, or resisting alcohol, acids, alkalis, oils and greases, chemicals and foodstuffs. All of them help to create an impressive decorative composition. Uniform thickness, accuracy of cutting, trueness and clarity of color, surface smoothness and built-in durability—all of these qualities make this the world's most popular line of resilient tile floorings.

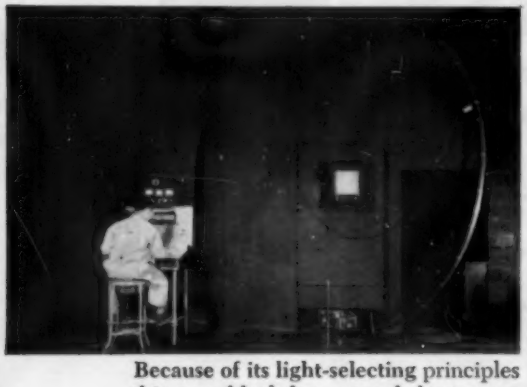
KENTILE, INC.

America's largest manufacturer of resilient floor tiles

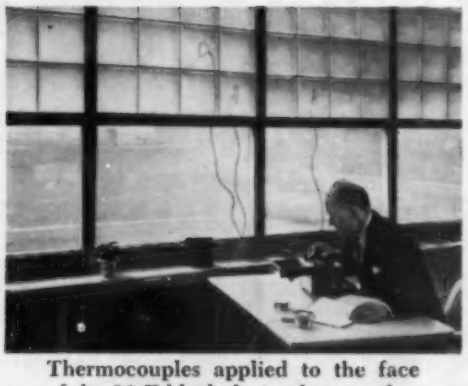
KENTILE: Asphalt Tile... Carnival... Corktone • KENCORK: Cork Tile for Floors and Walls • KENRUBBER: Rubber Tile • KENFLEX: Vinyl Asbestos Tile... Carnival • ROYAL KENFLOR Vinyl Tile... CUSHION-BACK KENFLOR Vinyl Tile... also available by the yard • SPECIAL KENTILE: Grease-proof Asphalt Tile • THEMETILE, KENSERTS: Decorative Inserts • KENCOVE: Vinyl Wall Base • KENBASE: Wall Base

Owens-Illinois' NEW SOLAR SELECTING Glass Block cooler in hot weather

Owens-Illinois new solar selecting Glass Block No. 80-F has a lower surface temperature during hot weather. It acts like a mirror reflecting a good portion of the direct hot rays from the sun, and at the same time transmits cool light reflected from the ground.

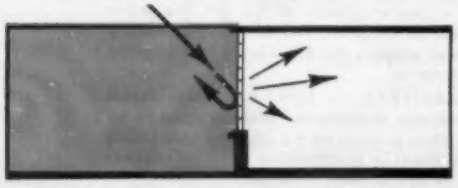


Because of its light-selecting principles this new block has a much lower surface brightness than other glass block. Maximum surface brightness as measured at the Daylighting Laboratory is less than 1400 foot-lamberts.

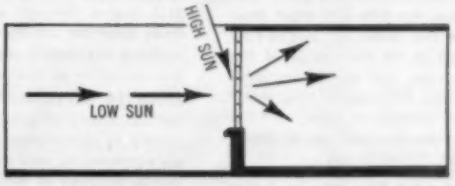


Thermocouples applied to the face of the 80-F block during hot weather (outside temperature 90°) showed that the roomside surface temperature was 14 degrees less than a conventional type light-directing block.

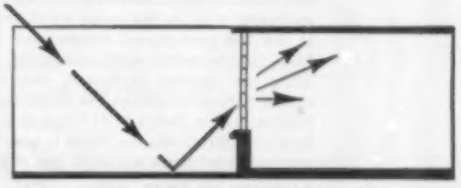
A similar test using a portable pyrometer confirmed the findings of the test using thermocouples by showing the same 14 degrees lower temperature on the roomside surface of the 80-F glass block.



Rejects hot summer sun—This diagram shows how the 80-F block reflects a major portion of the light from the sun at the critical 45° angle thus reducing brightness and solar heat transmission during hot weather.



Uniform light transmission—Prismatic design is selective and controls the amount of light transmitted from the various sun positions, thereby providing more uniform light transmission all day long.



Transmits ground-reflected light—This diagram shows how the 80-F transmits the cool light reflected from the ground. This feature is especially important when the sun is not on the fenestration.

Complete information available

Send for the free, technical bulletin that gives the details. Just write "No. 480F" on your letterhead and mail to Kimble Glass Company, subsidiary of Owens-Illinois, Dept. PA-7, Box 1035, Toledo 1, Ohio.

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VIEW OF SECTION OF TOP OF Josam SUPER-FLO DRAIN showing perimeter slots in addition to center slots.
VIEW OF SECTION OF TOP OF STANDARD DRAIN showing slots only in the center of drain top.
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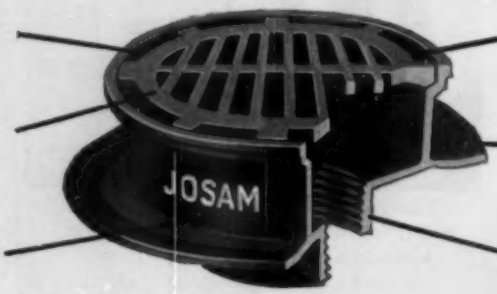
Josam SUPER-FLO Drain with 7" top
gives the same or greater flow rate and can be used instead of a
STANDARD DRAIN with 9" top

Through Josam pioneering, a great new advancement in drains is presented to the industry



Perimeter slots increase free area of top and permit greatly increased flow rate (GPM).

Standardized bodies permit interchangeability of grates, sediment bucket, round or square brass tops, etc.

Size and number of weepholes provide positive double drainage action.

Constant flushing is obtained by drainage flowing over inside surface of body.

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Female threaded outlet, standard. Inside caulk, optional.

GREATER FLOW. Josam SUPER-FLO Floor Drains are designed with perimeter slots in the grate which increase the free drainage area of the top and permit greater flow into the drain. In SUPER-FLO Floor Drains, waste water enters the drain *at the very edge* of the drain top instead of flowing over the wide rim of conventional drains before it reaches the grate openings. Because of this, water friction loss in Josam SUPER-FLO Drains is greatly reduced, and the flow rate (GPM) into the drain is greater than the flow rate in standard drains of the same or larger size top.

SAVINGS IN COST. Because of the increased flow rate in Josam SUPER-FLO Drains, a smaller top size Josam SUPER-FLO Drain can be installed to service the same drainage condition as a larger top size standard floor drain.

GREATER SANITATION. Since waste water enters Josam SUPER-FLO Drains through slots at the very edge of the rim, the water flows over the inside surface of the drain body, thereby constantly flushing the inside walls and keeping the drain body free from an accumulation of foreign deposits.

GREATER INTERCHANGEABILITY. Josam SUPER-FLO drains permit various styles of grates and tops, buckets and other features to be added or substituted even after drain is on the job. This also effects an economy in case of alterations in specifications or future requirements because of change in operations.

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Sherman Elementary School, Tacoma, Washington
Architect: Robert B. Price—*Contractor:* Ostruske-Murphy, Inc.

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Some architects have discovered the way to control school noise and save money doing it . . . by using long-span Fenestra* Acoustical-Structural Building Panels.

This remarkable multi-purpose building product combines the finished interior ceiling with a structural roof deck system, *plus* a noncombustible acoustical element built right into the panels. No acoustical material has to be pasted on the ceiling surface . . . just paint it. And the ceiling can be washed or repainted whenever needed without affecting the acoustical efficiency!

Cost? Both time and money are saved because Fenestra Panels replace separate roof deck and framing and eliminate the extra labor usually needed for acoustical treatment and plaster. The panels go up fast, and are ready for finish roofing as soon as they are in place and interlocked. Foundation and structural steel costs are also reduced.

Why not find out how Fenestra Acoustical-Structural Building Panels can be used in your next school building? Mail the coupon below for your copy of the new brochure—*Fenestra for Schools*—or call your Fenestra Representative.

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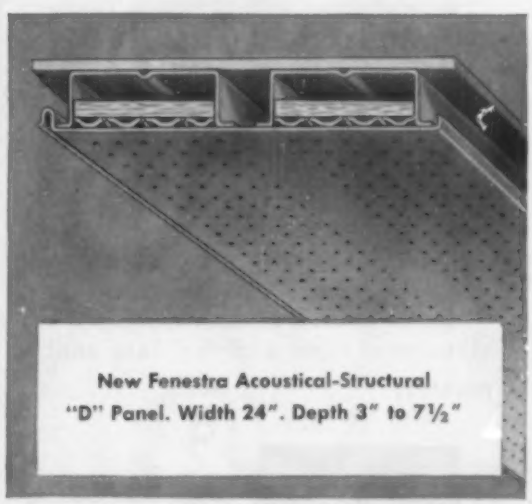

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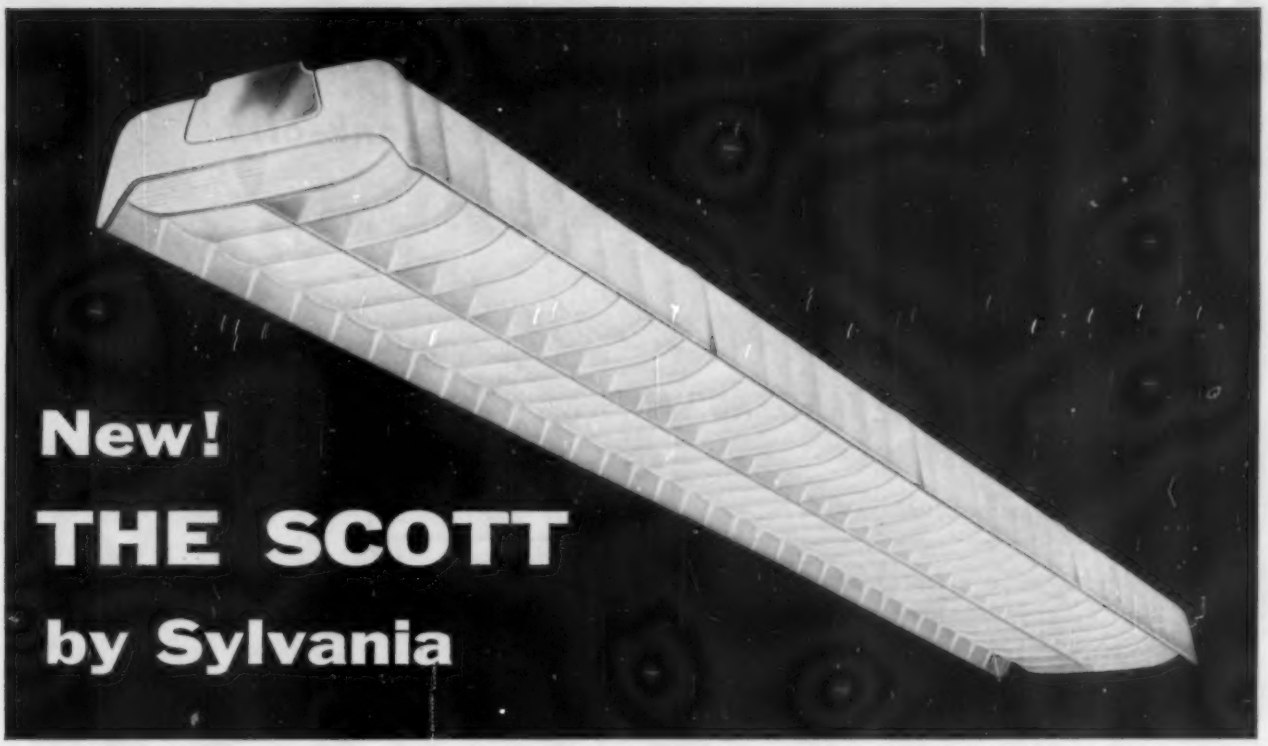

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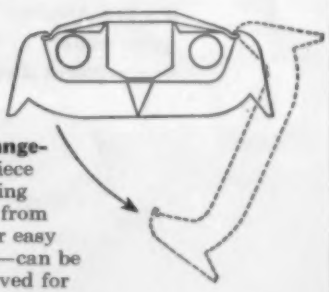

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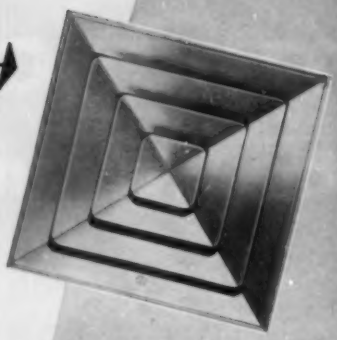
A good piece of equipment is no better than the experience behind it.



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It's the original square and rectangular outlet . . . not just a poor imitation without distinctive features.

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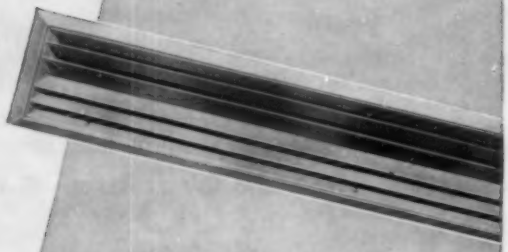

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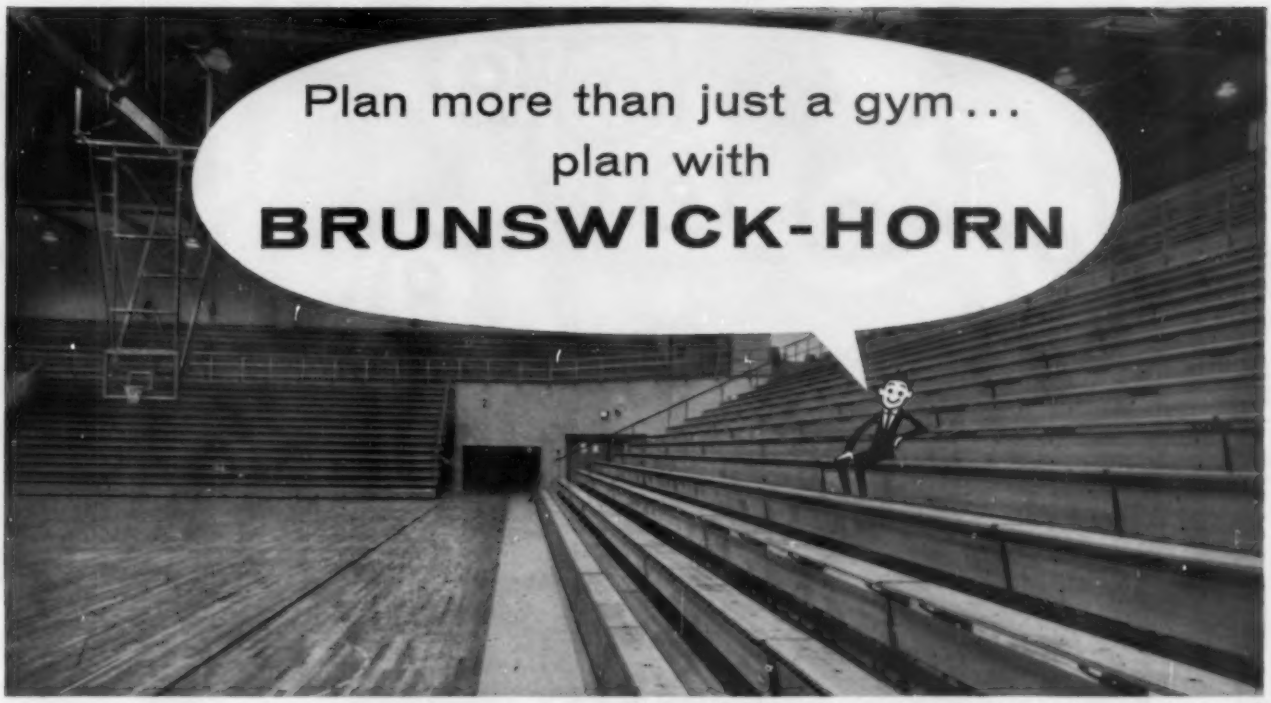

Brunswick-Horn Folding Gymnasium Seating locks secure opened or closed . . . cross-braced understructure stops sway or shake. In closing, foot boards tilt to spill litter on floor for fast, efficient removal.

■ **Today's gym is multi-purpose** . . . combining school activities with the athletic, civic and cultural needs of the community.

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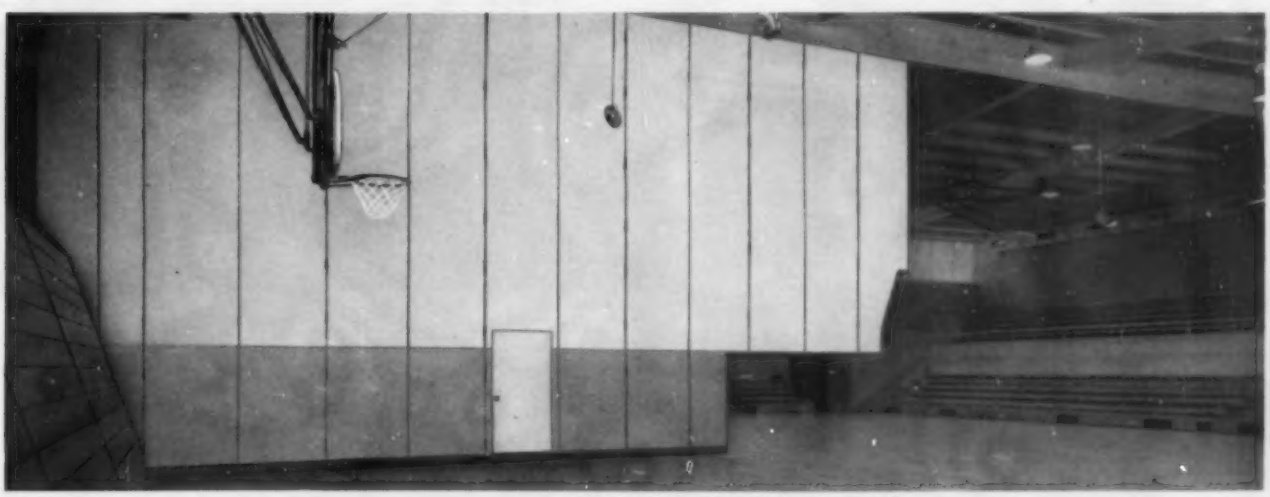
So remember—when it comes to designing *your* new gym . . . Brunswick-Horn planning service is yours for the asking. Write today for full information.

As for balcony seating, let Brunswick-Horn plan with you to eliminate line-of-sight problems and in turn: • Minimize construction costs • Provide maximum seating capacity and • Assure top spectator comfort and safety.



Brunswick-Horn Folding Partitions convert one gym into *two* in a matter of minutes . . . lock quick and quiet without bolts . . . automatically seal with floor.

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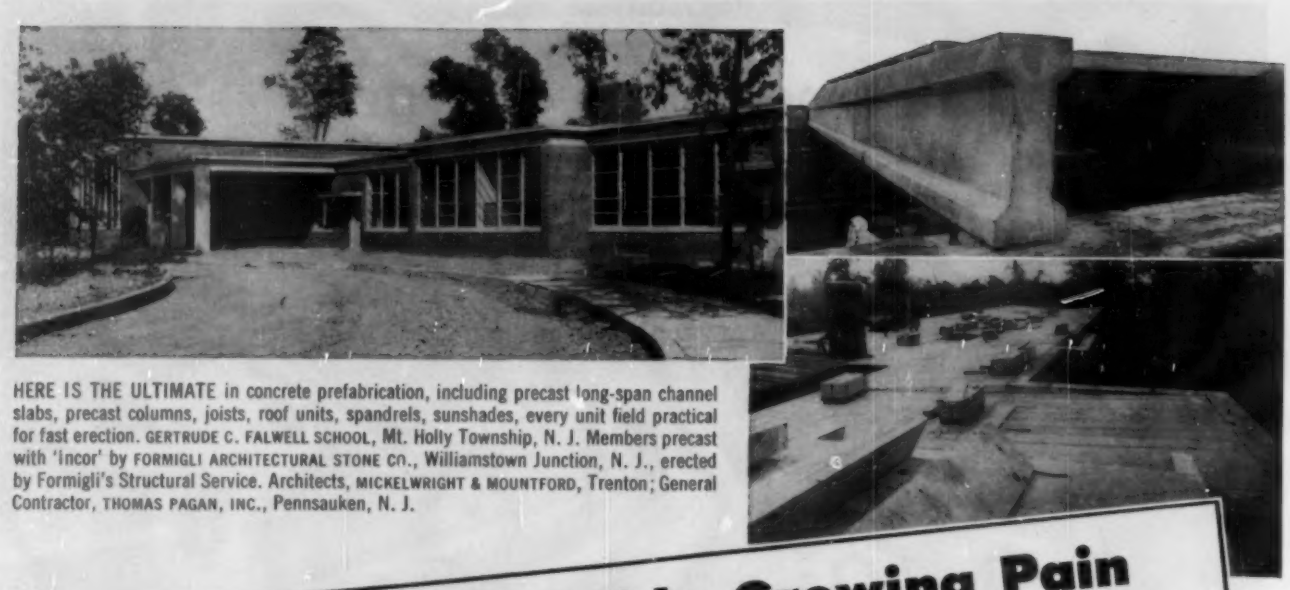

HERE IS THE ULTIMATE in concrete prefabrication, including precast long-span channel slabs, precast columns, joists, roof units, spandrels, sunshades, every unit field practical for fast erection. GERTRUDE C. FALWELL SCHOOL, Mt. Holly Township, N. J. Members precast with 'Incor' by FORMIGLI ARCHITECTURAL STONE CO., Williamstown Junction, N. J., erected by Formigli's Structural Service. Architects, MICKELWRIGHT & MOUNTFORD, Trenton; General Contractor, THOMAS PAGAN, INC., Pennsauken, N. J.

Rx for a Nationwide Growing Pain

Concrete Provides Time- and Money-Saving Solution for Critical School Shortage

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AMERICA has a case of growing pains, and nowhere more so than with schools. Sound design and building know-how is avoiding skimpy construction in meeting urgent need. Careful analysis almost invariably shows that concrete provides utmost value in attractive, durable, fire-safe structures.

Such is concrete's flexibility that it is possible to meet almost any school-building budget and assure a structure of highest quality from every standpoint. Two examples:

One represents prefabricated concrete construction at its best, with factory-made, quality-controlled members, produced to closest tolerances, for fast erection with minimum supervision . . . quality concrete elements, produced at assembly-line speed—and economy—with 'Incor'* 24-Hour Cement.

The other is a reinforced concrete school whose outstanding architectural treatment expresses in clean, uncluttered line the sound structural values which make concrete the first choice for schools.

Two of many fine, new schools, built with Lone Star Cements, providing the finest in modern construction at minimum cost, initially and through the years.

*Reg. U.S. Pat. Off.

WEST CHARLOTTE HIGH SCHOOL, Charlotte, N. C., is an outstanding example of attractive contemporary design in concrete. Vertical lines of exposed columns lend interest to the façade of this beautiful, reinforced-concrete structure, which well deserves its merit award as a national contest winner. Architects, GRAVES & TOY; General Contractor, C. D. SPANGLER CONSTRUCTION CO., INC.; Ready-Mix Lone Star Cement Concrete supplied by JOHNSON McMILLAN CONCRETE CO., INC.—all of Charlotte.

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S. C. Valastro

"MILE HIGH" SHEATHED

DENVER, COLO., JUNE 10, 1955—This sparkling, steel-framed, 23-story unit of Denver's renowned Mile High Center is one of the most "readable" buildings of our time. Guests this week at the Brown Palace Hotel just across Broadway from the Center, could study the completed exterior in armchair comfort.

The dark, cast-aluminum verticals and horizontals are a *true* expression of the structural columns and spandrel beams behind. *(See October 1953 P/A, page 102.)* The lighter, porcelain-enamel surfaces echo the building's perimeter heating and cooling elements—the 24-in.-deep horizontal lines covering room units, and the 7-in.-wide verticals sheathing air risers. Fixed glass—a 12-in. band between floors and air-conditioning units, and 6-ft panes above—complete the pattern.

Webb & Knapp, Inc., Architectural Division (Architect, I. M. Pei, Director); Kahn & Jacobs and G. Meredith Musick, Associated Architects; Severud-Elstad-Krueger, Structural Engineers; Jaros, Baum & Bolles, Mechanical Engineers.

NEW MIT BUILDINGS OPEN

By George A. Sanderson

CAMBRIDGE, MASS., JUNE 9, 1955—Graduation exercises at the Massachusetts Institute of Technology were held today in the new, domed Kresge Auditorium *(photos below)*. This structure and the adjacent round Chapel form the nucleus of the Institute's emerging cultural and social center. It was my privilege to attend ceremonies dedicating these two provocative buildings, both of which are the work of Eero Saarinen & Associates, Architects; Anderson, Beckwith & Haible, Associate Architects; Ammann & Whitney, Structural Engineers. In the general photo *(above)*, note that the shapes of the new buildings echo existing forms of the older Tech buildings in the background.

The pictures show the buildings in their present state, with landscaping incomplete, and the Roszak-designed spire of the Chapel not yet installed. Since the architects (understandably) requested the architectural press not to document the buildings fully at this time, this is simply a personal account of my reactions to the buildings at time of the dedication ceremonies.

Three-Point Support

For the auditorium, a thin-shell concrete dome, in the shape of one eighth of a sphere, is supported on three points, while the great arched and convex spaces in the interstices are filled with glass set in narrow steel sash. Both the main auditorium, seating around 2000, and a little theater beneath it, are developed within the domical enclosure. In the main room, the soaring curve of the roof, painted a blue-gray, hovers in apparently infinite space above putty-gray acoustical baffles suspended in carefully calculated planes to provide exceptional acoustics. Above these baffles, which also serve a decorative purpose, are all manner of lighting and ventilating elements, out of sight from the audience.

The whole back wall of the stage, as well as sizable areas along the two sides of the auditorium, are surfaced with natural oak stripping to form a calm and handsome background. The metal backs of the auditorium seating are in various colors—blue, blue-green, yellow-green, lavender—providing a cheerful tapestry of color when the auditorium is empty or partially filled. Stadium seating is in upper and lower tiers.

On Dedication Day, we experienced the hearing environment under a wide variety of conditions. For there were speeches; fanfares and processional marches by a Brass Choir; and the MIT Symphony Orchestra, Glee Club, and Choral Society performed Aaron Copland's "Canticle of Freedom," especially

Photos (except as noted): Sanderson

The remarkable new nondenominational Chapel is a simple cylinder of skintled, red-brick masonry, with no apparent windows but broken near the base by recessed arches backed with natural-toned concrete. The circular structure rests in a water-filled moat. The concrete linings of the base arches are actually part of an inner wall, whose purpose is evident only on entering the building. For the space between outer brick structure and inner concrete wall is the source of the mysterious, muted daylight that enters the Chapel perimeter, through horizontal glazing that joins inner and outer structures. Gently moving light, reflected up from the rippling water of the moat, wavers along the serpentine interior wall surfaces. A stunning play of brilliant light derives from a round ceiling skylight and streams down across the shimmering beauty of a delicately scaled golden screen, or reredos—the work of Harry Bertoia —onto a pure white marble block that serves as the ceremonial table.

composed for the occasion, and, later in the program, a noble Bach cantata. To my ears, at least, the unique auditorium lived up to its reputation for ideal acoustics. Bolt, Beranek & Newman, Inc., were acoustical consultants.

It is in the main lobby, which occupies more than the full east-facing, windowed segment of the building, that one appreciates most dramatically the design result of the bold design concept. For at each end, a great, fan-shaped pendentive of the thin-shell dome swoops down to its pinned, metal pedestal, which transfers the roof load to concrete piers and so to the earth. Walls between, baying out to follow the curve of the dome above, are mainly of glass, with only thin, black-painted metal frames and supports.

On the floor below, underneath the main auditorium, is the engaging little theater, with seating for 200. A bright scheme includes yellow doors, rough-textured seat upholstery, and a stage curtain in a bold tan, black, and white pattern. As in the big auditorium, several rows of the forward seating may be removed for flexibility of use or to bring stage and audience in closer relation.

Outside, the uncompromisingly simple form of the domed structure is a vigorous declarative statement. And the windowed side wall arcs are crowned by the clear sweep of the white-surfaced dome, edged in aluminum. The building is surrounded by a round, gray-red brick terrace, which is a visual extension of the lobby floor within.

Mechanical Engineers for the project were Hyde & Bobbio; Stanley McCandless served as Lighting Consultant; George A. Fuller Co., General Contractor.

MIT News Service

Philip Lieberman

AIRPORT TERMINAL NEARS COMPLETION

ST. LOUIS, MO., JUNE 12, 1955—The boldly conceived terminal building for the Lambert- St. Louis Municipal Airport, which has been widely reported in the national press and was heralded in January 1953 P/A as one of the two best-designed public-use structures of that year, now gives clear evidence that it will live up to its promise. While much finishing remains to be done, reports this week were that its doors will probably open early this Fall. Hellmuth, Yamasaki & Leinweber are the Architects; William C. E. Becker, Structural Engineer; Edgardo Contini, Consulting Structural Engineer; Landrum & Brown, Airport Consultants.

The structure is organized on three levels, with service drives, catering kitchen, offices, and air-mail and air-express spaces at the apron level; baggage handling and passenger concourse out to fingers (leading to plane stations) are at the middle level. At the top is the remarkable, huge 120′ x 360′ public room, enclosed under three 32-ft-high thin-shell concrete vaults, with glazed sides and ends flooding the interior with daylight. Here—the level to which taxis or buses will bring outgoing passengers *(above)*—are ticketing counters, waiting space, dining rooms, and access to visitors' observation deck (above finger). Moving stairs go down to the intermediate level.

Photos: Paul Piaget

William Hurd Hillyer

$ details

Architects will be affected, during the second half of 1955, by a number of economic factors, in ways not commonly traceable. Notable among these is the current wave of banking mergers, climaxed by the formation of four giant New York City institutions with resources totaling some $20 billions. Congress has noted that banks are fewer in number, nationwide, than at any time for 50 years, though far richer in resources.

Where banks open up in new places, they are for the most part offspring of perhaps distant parents. Establishment of such branches, even in an era of record-breaking bank construction and remodeling, tends to curtail opportunity for the local architect as compared with the design of independently owned financial units. Furthermore, banking chains and groups, through holding company media, are increasingly preoccupied with industrial activity at policy levels. The result is a tendency to concentrate architectural commissions among fewer firms on new construction or expansion, both of plant and industrial housing. The number of possible clients available to the profession as a whole may be correspondingly reduced. Outright industrial consolidation will doubtless call into play a similar principle.

On the other hand, symptoms of a healthy reaction against the size as such presage a beneficent counterswing in the future. Such signs are economic rather than political and strongly favor the local architect. The smaller, more flexible manufacturing company with capital of less than $5 millions has been found to possess marked advantages over its big competitor, and hence is due for expansion and architectural services. Says Executive Vice-President Heimann of The National Association of Credit Men: "Earnings per dollar of sales, per share of stock, and even per capita production can and frequently do in smaller companies exceed on a ratio basis" those of the "large" corporations. Implementing this dictum, regional policy-molding groups are teaming up with Uncle Sam's Small Business Administration. In Oklahoma, for example, that State's Banking Association and College of Business Administration are jointly sponsoring a series of Oklahoma Banking Association conferences for independently owned and operated businesses.

The money scene as a whole has been marked by a continuation of the tightening tendency noted last month. This is reflected in higher interest rates—a rise from 1.5% to 1.75%—charged by Federal Reserve Banks on money loaned to banking members. The same authority boosted margin requirements on stock to 70%. Both steps are viewed in monetary circles as cautionary rather than restrictive. The open marked cost of borrowing through the use of "bankers acceptances" has been rising fractionally for months, but is still reasonably low.

Despite consumer-debt warnings run up in highly placed quarters, liberal homebuilding credit remains a favored member of the banking and economic family. Installment credit in general, now 23% of all loans in commercial banks, was defended before a special group of the Tennessee Bankers Association by Dr. Frank S. Ward, Dean of Tennessee's School of Business Administration. Though applicable primarily to "consumer goods" such as automobiles, appliances, and wearables, his thesis has resonances in the residential building domain. He dubs installment credit "fractional selling"—that is to say "the breaking up of a single large price ticket due now into a number of smaller price tickets" post-dated. Such a device, he avers, makes a large sales production possible "not only by moving demand closer to the present but also by *adding* to the demand." Well received by participating bankers, this analysis of semiperishable purchases is doubly applicable to permanent dwellings and their modernization.

Additional factors, indicative of conditions that promote the architect's prosperity, are abundant. To name a few:

Bank check activity continues to climb; highest record totals are reported in 26 key cities, with from 5% to 12% average current increase over last year;

Industrial production outlook is best yet, with rising order-tide foreplotting a '55 sales increase of at least 10%, individual gains touching 20% in many cases, and Federal Reserve Index up more than 11 points from 1954;

U. S. Government's good collections may slice the fiscal year's deficit by some half billion dollars;

Fewer construction failures—down 11% for first quarter as compared with same period in '54—reflect healthful building climate;

Over-all business will continue at higher levels during second half of year, three of nation's largest banks join in predicting;

Anticipated capital investment has been revised upward by government scanners—5% above current rate compared with the 5% decline looked for late last year;

35,000 new housing units are authorized by Government as of June 30, being half of a 70,000-unit three-year program in step with near-record homebuilding starts;

Steel output is averaging highest in history at 10-millions-ton monthly rate;

Prompt bill payments by business concerns provide evidence of improved cash position;

Machine tool orders mount as manufacturing firms expand facilities and plan new factories;

Personal income left over after taxes, for spending or saving, has touched a high record of $260 billions per year with total "national production" hitting a $370 billions annual rate;

Consumer spending, up 5% since '54, reflects individual well-being;

Unemployment still declines, the State-law jobless decrease running around 12% monthly while employment increases in construction and allied fields help to offset seasonal layoffs in other activities;

Municipal and corporate bonds are in steady demand, particularly for longer maturities, thus assuring a money-stream for public and industrial building.

Reinforcing this array of plus-sign factors, a reported easing of international tensions at this writing further nourishes the hope that 1955 will round out its second half without sensible diminution of the "good times" which have marked it thus far. Money rates will be tighter, speculation will be curbed, activity will lessen in some quarters, but there will almost certainly be much new building with supporting funds in reasonable supply.

Chapel

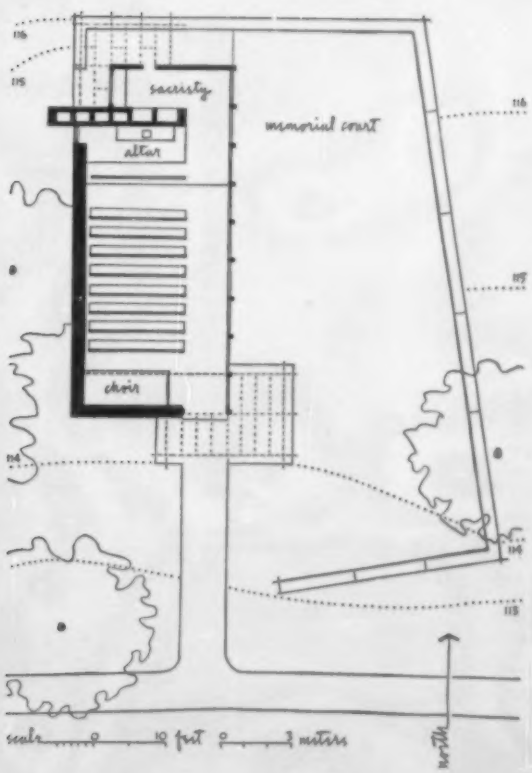
client	Colorado Agricultural & Mechanical College
location	Fort Collins, Colorado
architect	James M. Hunter

This engaging little chapel, accommodating 50 persons, is for use by faculty and students of the college. Secluded in a grove of walnut trees and just a short distance from the busy portions of the campus, it has become a favored spot for quiet, private meditation and the religious services of all denominations. A small memorial court, directly adjoining the chapel's window wall, is intended for outdoor services. "One cannot help but be pleased with the extent to which the Danforth chapel has come to be considered an essential part of the campus," comments Dean Bates. "In a large measure this can be attributed to its dignified atmosphere and distinctive appearance."

The basic structure of the chapel is simple and direct, employing native materials and crafts whenever possible. White native sandstone faces the masonry walls, deep red flagstone forms the floor, and redwood frames windows and doors.

For the chapel's construction an initial gift of the Danforth Foundation was supplemented by a subscription raised by the students. The understanding and foresight of these sponsors in assigning to the architect full control over building, landscaping, furnishings, and accessories, is undoubtedly responsible for the harmony and unity of the design. From the earliest planning stages, the architect worked closely with Emil Frei, who composed the stained glass window at the west wall, and with Lynn Wolfe, designer of the copper doors and altar appointments. Marshall & Johnson were Heating Consultants; Clarence Jones, General Contractor.

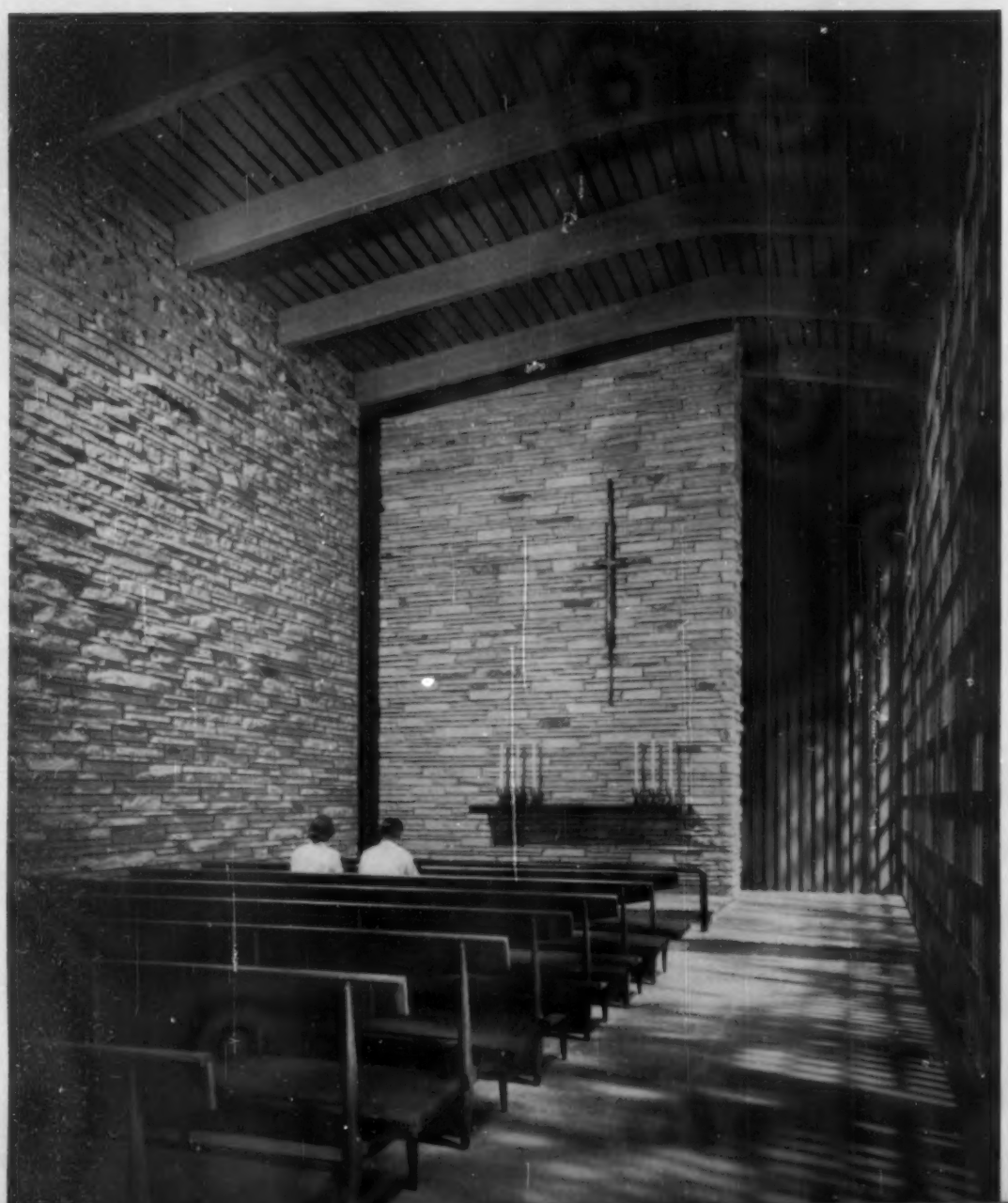
Photos: Reynolds-Photography Inc.


sacristy
memorial court
altar
choir
scale 0 10 feet 0 3 meters
north

Colorado A&M: Chapel

Brilliant blues and reds filter through the high and narrow stained glass window (right) *to illuminate the altar. A regular pattern of deep red flagstone* (below) *surfaces the floor in the chapel. Laminated roof beams are wall-bearing on the solid west wall and column-bearing on the glazed east wall. Short distances between ceiling beams are spanned by 2" x 6" fir boards, stained light-gray and laid flat. Rigid insulation above is dense black to emphasize 1½ in. joints between fir boards. Pews are of black walnut—foam-rubber seats covered with brown-black fabric. Radiant panel heating extends under the entire stone floor and to a height of 6 ft along the west wall. A strong spotlight concealed behind the ceiling beam nearest the altar and a few cone-shaped lights over the entrance provide dramatic night lighting.*

Spaces between columns along the window wall (acrosspage and SELECTED DETAIL, page 125) *have been filled with a pattern of redwood muntins and mullions. Light through three shades of amber glass bathes the interior in a warm glow. A cantilevered slab of black marble is the altar, providing the center of interest. The cross of colored glass fused to copper recalls the fiery colors of the west window.*



Orange Coast College

location	Costa Mesa, California
architect	Robert E. Alexander
associate architect	Richard H. Pleger
landscape architects	Eckbo, Royston & Williams
color consultant	Rex Brandt

Fast emerging from a 243-acre section of a former Army Air Base is the striking new campus of Orange Coast College, a public junior college located in the busy agricultural and oil area southeast of Los Angeles. In February 1952 P/A, we presented the full campus plan and described three of the earliest completed structures —the Library, a cattle-feeding unit, and the Technology Building. Now, in this issue, we show three of the newer buildings —the Student Center, the Art Center, and the Business Education Building (first campus building completed since Richard J. Neutra formed a partnership with Alexander). Also, as a herald of good things to come, note the photograph (*across-page*) of the recently completed Speech Arts Building and Auditorium, which was designed by Neutra & Alexander, and will be presented in P/A later this year.

The curriculum of Orange Coast—which determined the required buildings —is based on impressively extensive surveys of the educational and occupational needs of the region. Essentially these are self-appraisals, since they were made by the College staff, including both trustees and administrative officers.

For development of the co-ordinated campus, Alexander gives very special credit to the Board of Trustees, all five of whom have served since inception of the project. These are: Louis Conrady, D. D. Lawhead, Harry R. LeBard, Walter M. Longmoor, and Horace Parker. The various administrative officers who have been highly instrumental in seeing that the scheme has prospered include: Basil H. Peterson, Ph.D., President of Orange Coast and District Superintendent; James W. Thornton, Jr., Ph.D., Vice-President; William J. Priest, Ed.D., Assistant Superintendent in Charge of Vocational Education, Adult Education, and Summer Session; and William F. Kimes, M.S., Assistant Superintendent in Charge of Business. Members of the Neutra & Alexander staff who are accorded particular mention are: Dion Neutra, Robert Pierce, Dike Nagano, Frank Kelly, Al Boeke, and Andrew Balfour. Credit is also extended to the California State Division of School Planning. *Photos: Julius Shulman*

Wing of the Business Education Building **1**

2 *The canopied entrance to the Student Center*

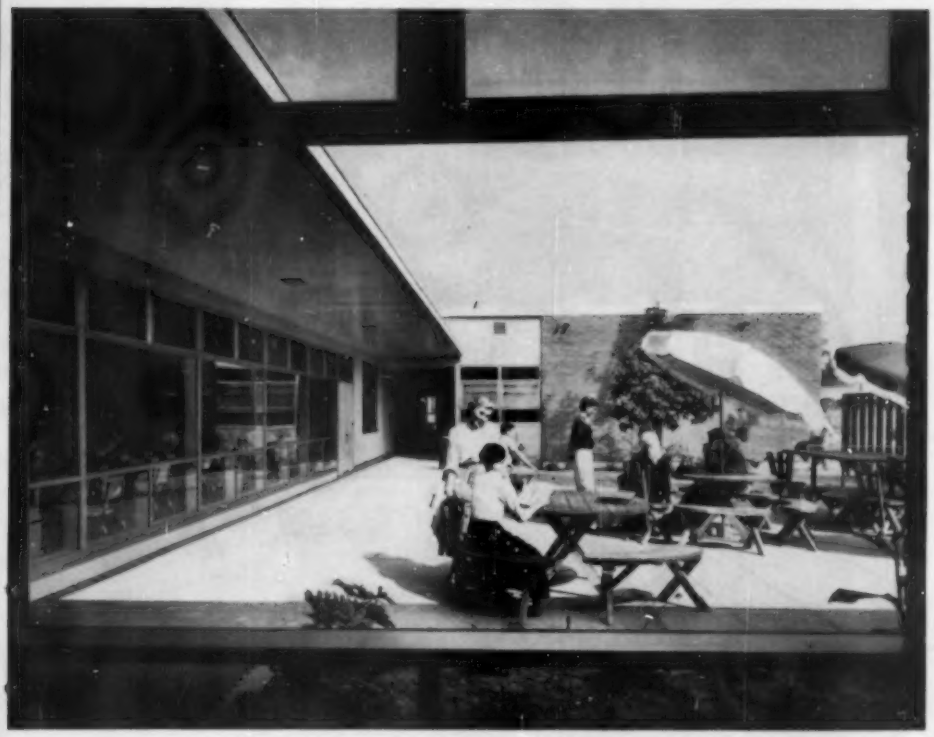
3 *Speech Arts Building* (to be shown in a later issue)

Photos on this page are keyed to aerial photograph (acrosspage). *The Technology Building* (**A**) *and the Library* (**B**) *were presented in February 1952 P/A.*

4 *Court of the Art Center*

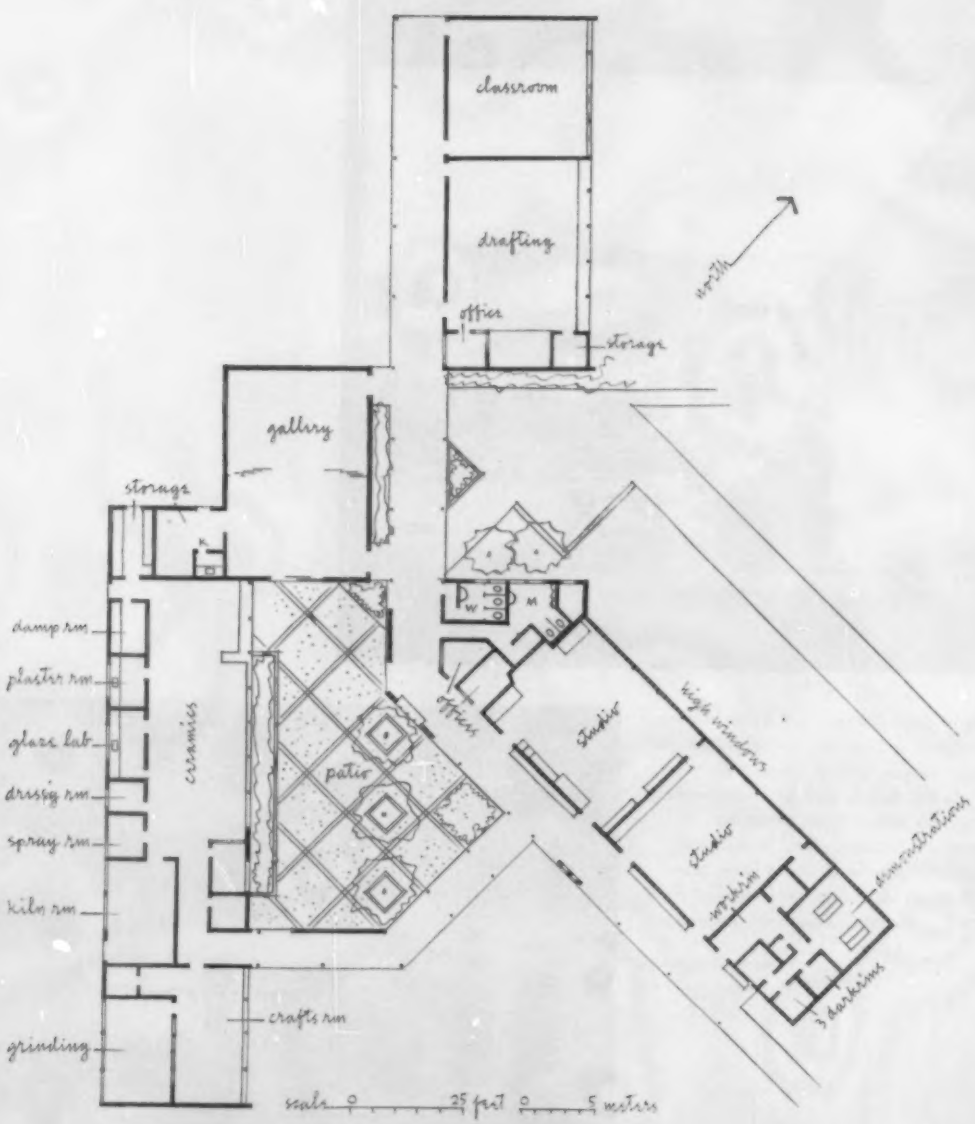
Orange Coast: Student Center

Eating, lounging, and recreational facilities are supplemented by student group offices, a journalism classroom, and a bookstore. The lounge (right) *may be used as an informal auditorium and stage (raised area at rear). Sliding panels and accordion-fold doors offer great flexibility in use of dining spaces. A landscaped, south-facing court* (below) *provides a sunny outdoor lounge.*

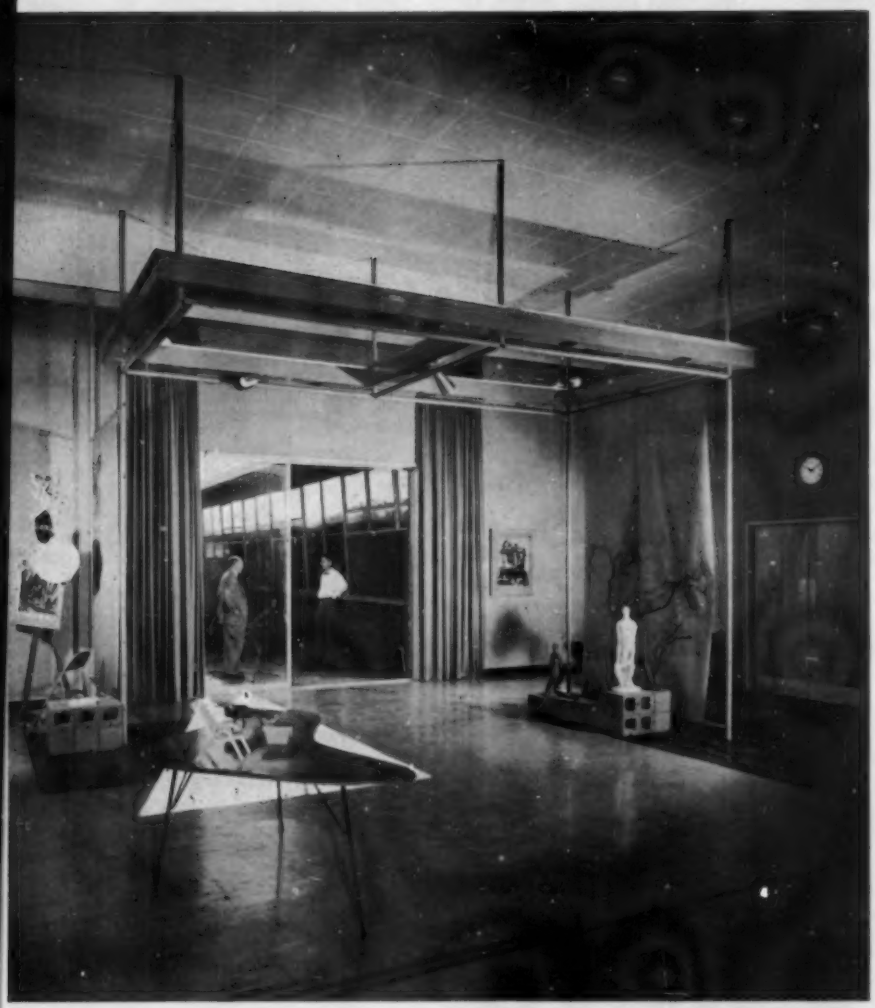


Opened sliding doors join lounge and main dining room (right). *Structure is basically wood frame on concrete slab, grade beams, and caissons. Exterior materials include plaster, brick, and enameled-metal sunshades. Floorings are wood block or asphalt tile; acoustical tile is used on ceilings. Sash is aluminum-projected type. Parker, Zehnder & Associates, Structural Engineers; Bartlett & Berky, Mechanical Engineers; Sheldon W. Swickard, Electrical Engineer.*

Orange Coast: Art Center



Campus buildings containing classrooms are oriented to the northeast; special-purpose buildings, north. This building occurs at the pivotal point where the two types join; hence, the odd plan shape. Departments include painting, ceramics, lapidury crafts, photography, and drafting. A central display gallery (below) can be divided into two rooms by means of sliding, room-height panels. Note the hanging indirect-light troughs, into which vertical slotted-pipe frames can be inserted and screwed into floor sleeves. Horizontals may be inserted at any point—providing endless display possibilities.



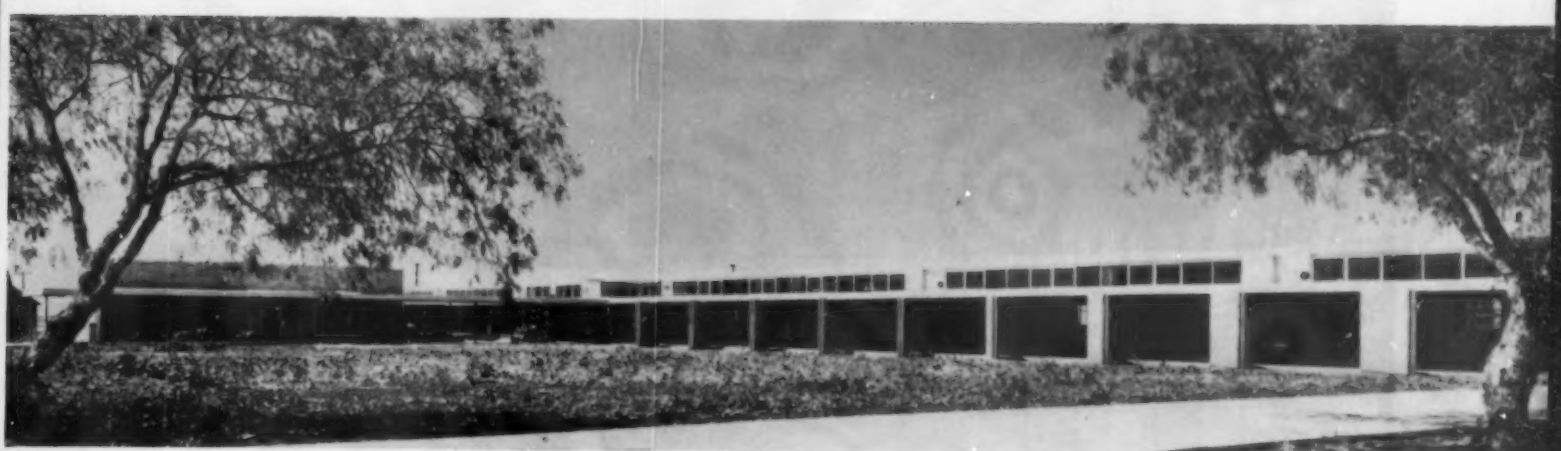
Layout of the complete ceramics department (top) utilized suggestions by William Payne, art instructor. North-facing windows of the painting studios (right) have shade control. The structure is mostly of wood frame (posts and laminated beams, 8 ft on centers), but some steel is used in the gallery unit; roof is wood frame and decking. Natural brick and plaster are used for exterior walls; 2-ft-sq acoustical board surfaces the ceilings, and floors are asphalt tile. Sash are galvanized steel. Parker, Zehnder & Associates were the Structural Engineers; Bartlett & Berky, Mechanical Engineers; and Sheldon W. Swickard, Electrical Engineer.

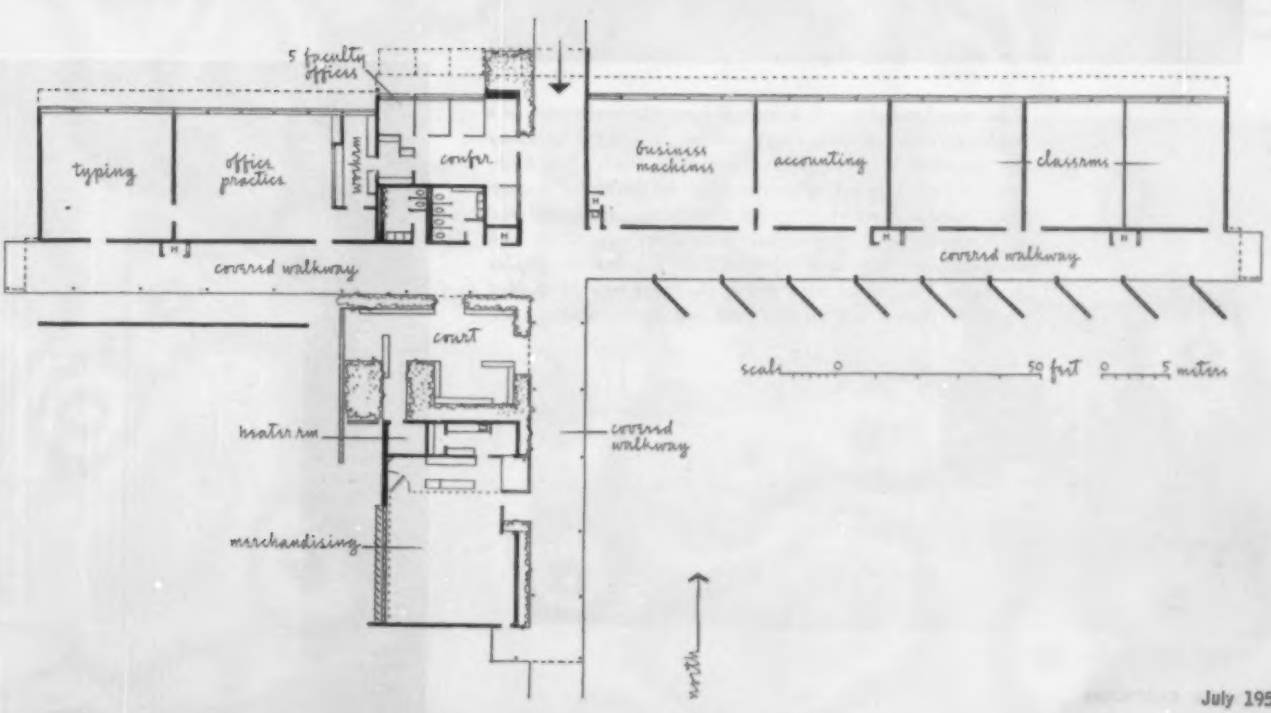
Orange Coast: Business Education Building

First of the campus buildings designed by the partnership of Richard J. Neutra & Robert E. Alexander, this T-shape structure houses a variety of facilities for instruction in business practices. The accounting lab serves also as a filing-systems teaching room. Most extraordinary unit is the merchandising lab, complete with its showcase and other elements to be found in a small store.

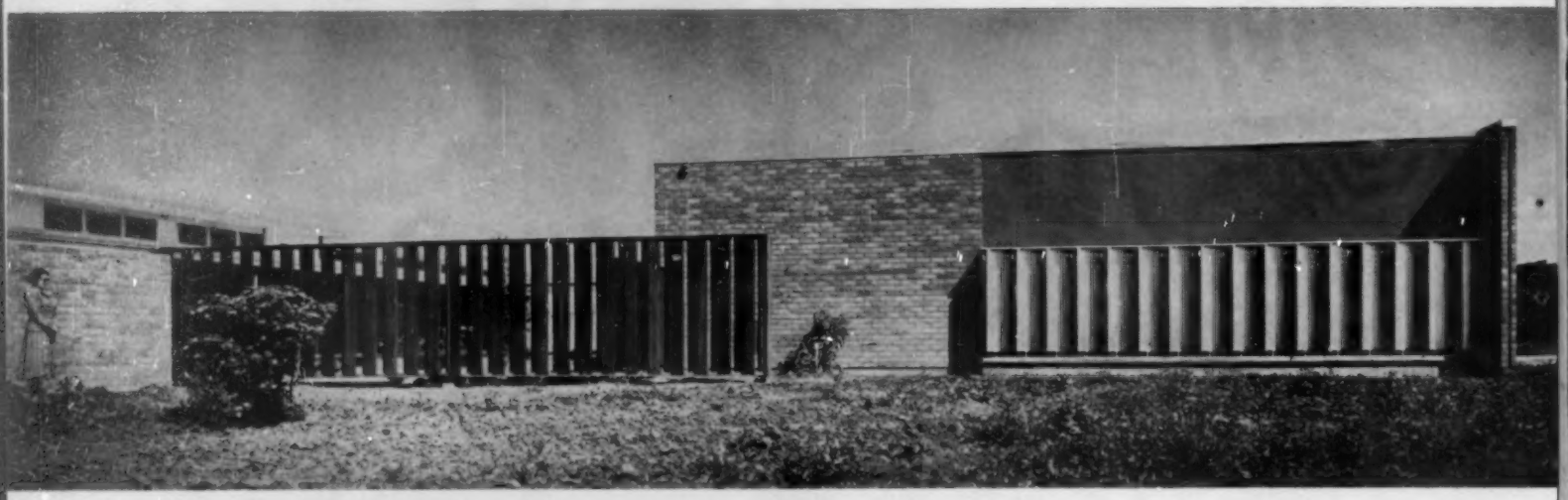
For details of louver at main entrance (top), *see* SELECTED DETAIL, *page 124.*

A landscaped court separates the merchandising lab unit from the main building (two photos acrosspage, bottom). *Bordering the south-facing access corridor of the classroom wing* (below) *are bold masonry wing walls, set at an angle* (right), *that protect the passage from prevailing winds and rains, as well as sun. Basic structural scheme is of reinforced brick, the transverse walls supporting a continuous steel beam left exposed on the interior. Other portions utilize wood frame and brick veneer. Rooms are heated by individual gas-fired warm air furnaces, individually controlled thermostatically.*





Orange Coast: Business Education Building



The merchandising lab is set off from the main unit in a separate little building (top), *whose west-facing windows are screened by corrugated aluminum louvers. The large space within* (above) *offers complete flexibility for instruction in the many phases of merchandising. At the far end of the room, a display corner with three-way mirror and store-lighting fixtures* (right) *allows practice in display methods. This whole work end of the room may be divided from the main space by accordion-fold partitioning.*

The office practice lab (right) *is equipped with a demonstration office, a PBX board serving 10 stations within the room, and several dictating machines that may be operated at different speeds. At the far end of the room is a duplicating-machine room that is used both for practical use in the duplication of material or (with a vertically sliding door raised) as a demonstration room for duplicating equipment.*

Bordering the campus entrance to the merchandising lab (left and below) *is a typical store display window, where students can test their talents. The curriculum includes all phases of the practice and operation of a small store. For the Business Education Building, Parker, Zehnder & Associates were the Structural Engineers; Morton K. Shields Co., Mechanical Engineers; and Norman Levenson, Electrical Engineer.*

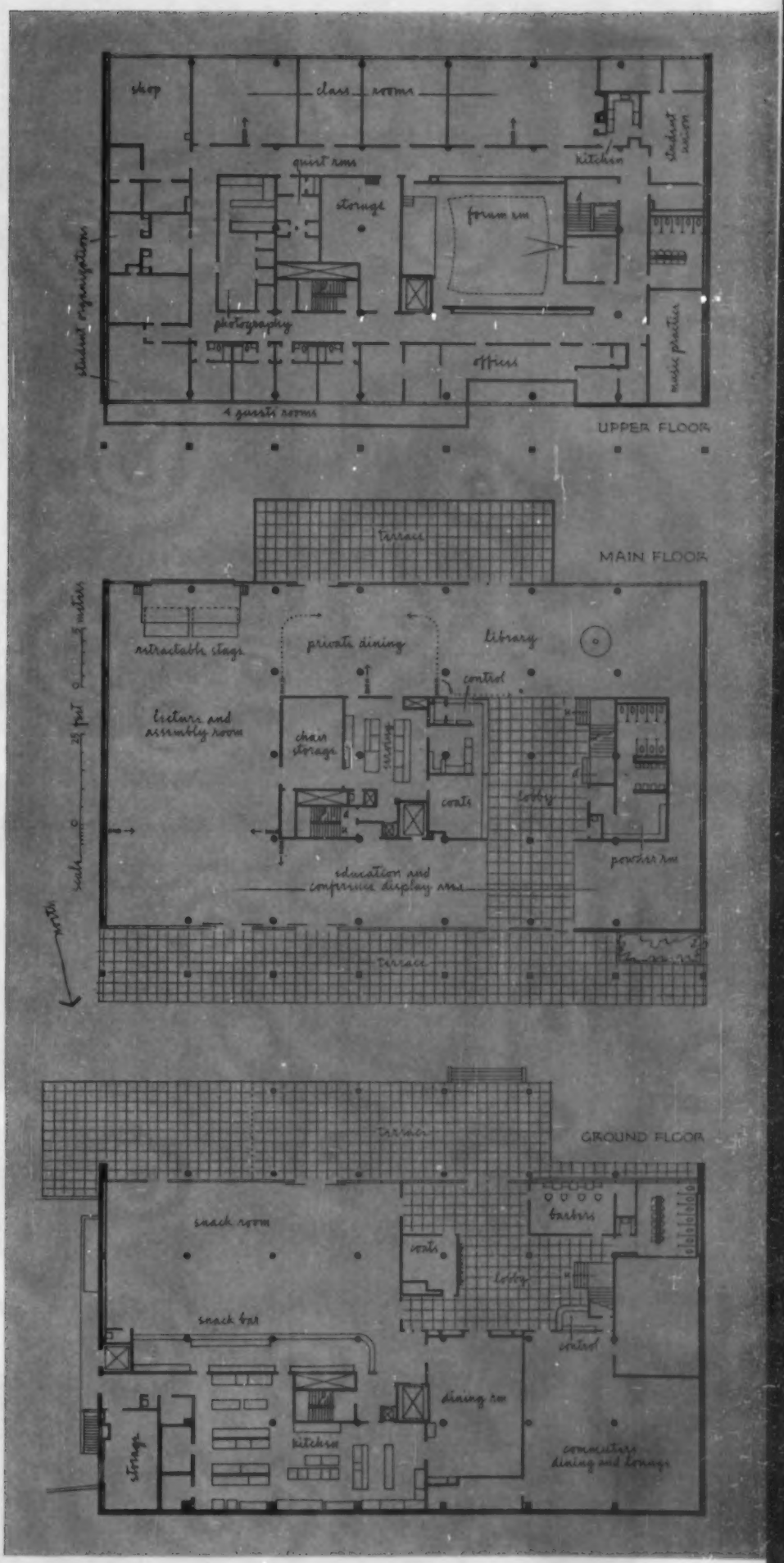
Student Center

client	North Carolina State College
location	Raleigh, North Carolina
architects	Wm. Henley Deitrick-John C. Knight & Associates
interiors	George Matsumoto and Cecil Elliot

This student center is so placed on its sloping, campus site that it has entrances at grade on the north (street level) front; to the south (campus level); and to the east (service entrance). Porter Butts was Planning Consultant, working closely with the college officials to determine needs.

To stay within the cubage limit, extreme flexibility was required, especially noticeable in the street-level ballroom-lounge-banquet space which may be variously subdivided by folding partitions. Spaces used most continuously by students—snack bar, terrace, barber shop, billliard and table-tennis rooms—are placed at the campus level. The top floor houses meeting rooms; accommodations for college guests; and offices for administrative personnel and student organizations.

Structural system is reinforced concrete except for the floor over the ballroom and roof above the forum room, which consist of concrete slabs on long-span bar joists. Exterior walls are brick, with native bluestone spandrels. Interiors are plaster, or (in service rooms) glazed structural units. Floorings include vinyl tile, maple, terrazzo, marble, and ceramic tile. Acoustical plaster is used on the ceilings. All sash are aluminum, whether fixed, operating, or sliding. The warm air heating system is split into five automatically controlled zones. The system is designed for addition of future cooling, without alteration. T. A. Loving & Company, General Contractor.


shop
class rooms
quiet rms
kitchen
storage
forum rm
photography
offices
music practice
4 guests rooms
UPPER FLOOR
terrace
MAIN FLOOR
retractable stage
private dining
library
control
lecture and assembly room
chair storage
seating
coats
lobby
powder rm
education and community display area
terrace
GROUND FLOOR
snack room
barbers
coats
lobby
snack bar
control
dining rm
kitchen
storage
community dining and lounge

N. C. State: Student Center

The library-lounge area (above) *occurs on the south wall of the main floor.*

A typical guest bedroom on the upper floor (right) *opens onto a balcony that is sheltered by a columned, two-story portico, echoing a local tradition.*

Photos: Joseph W. Molitor

The dining-assembly-lecture area on the main floor of the building (below) *may be made into a number of smaller rooms, by means of accordion-fold partitions, for simultaneous use by different groups.*

Architecture Building

client	Georgia Institute of Technology
location	Atlanta, Georgia
architects	Bush-Brown, Gailey & Heffernan

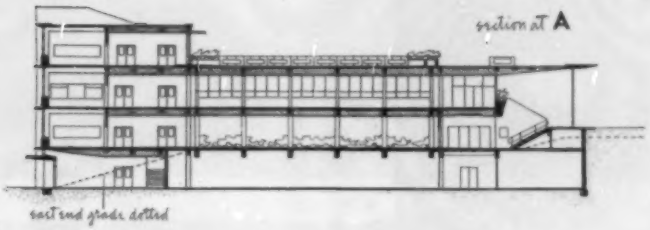
Georgia Tech: Architecture Building

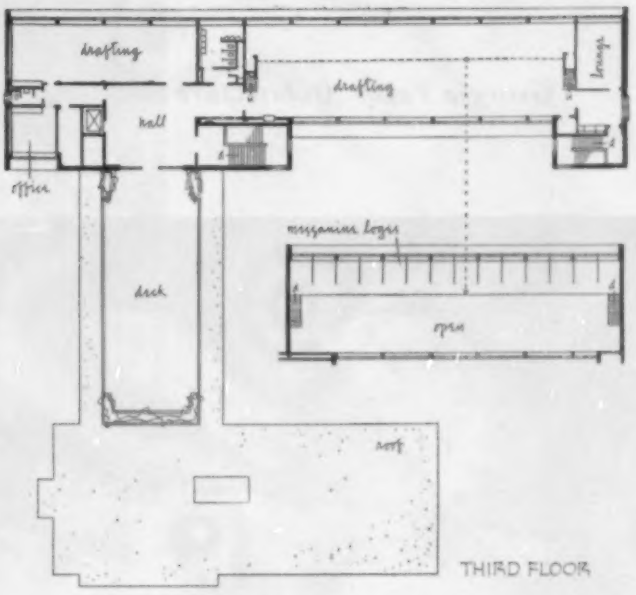
"This million-dollar building is unique in the annals of architectural school buildings," comments Director Bush-Brown, "in that the State of Georgia has provided for all needs in a building designed and supervised by those who will occupy it—members of the architectural staff." Thoroughly familiar with the problems and requirements of an architectural school plant, the architects have achieved an environment both fuctional and harmonious, undoubtedly conducive to an effective architectural training program.

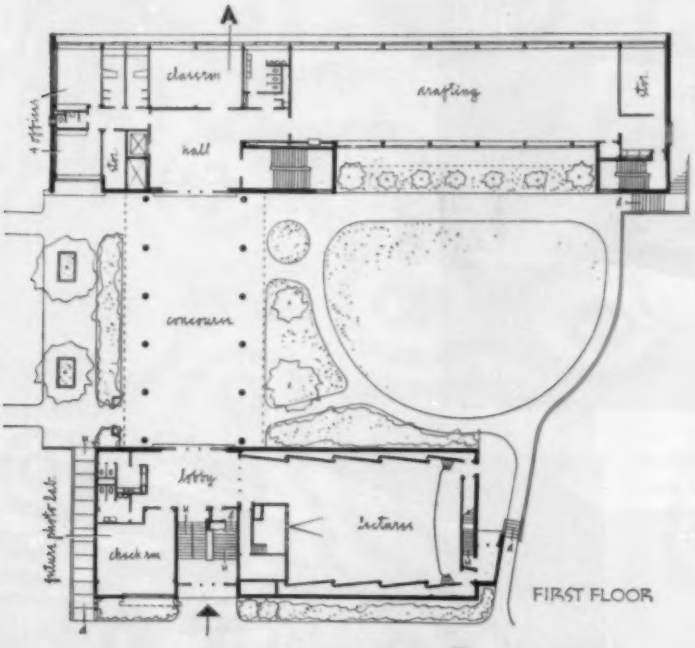
In consonance with principles of the master plan for the entire campus, the new building enjoys a spacious site, insuring light and air, and room for possible future expansion. By varying ground levels, the building has been closely related to its sloping site and an extensive garden now in process of development. The main entrance (*photo overpage*) is located in the two-story south wing, which houses an auditorium large enough to accommodate the 300 students of the architectural department, an exhibition and judgment room, a director's office, and staff rooms. This wing is also used on occasions by other departments of the university and by the Atlanta community. The four and one-half story north wing (*right of photo above*) on the lower half of the site features privacy and ample natural light for its working areas, such as classrooms, offices, an industrial design shop, and a large drafting room with mezzanine study cubicles. A connecting structure (*left of photo above*) containing library and gallery, with open concourse below and roof deck above, links the south and north wings. Except for the gallery, all major windows have been oriented north or south for maximum daylight, also avoiding the slanting rays of the morning and afternoon sun. Projecting canopies over the windows serve as controls against sun and rain and as scaffolds for window cleaning.

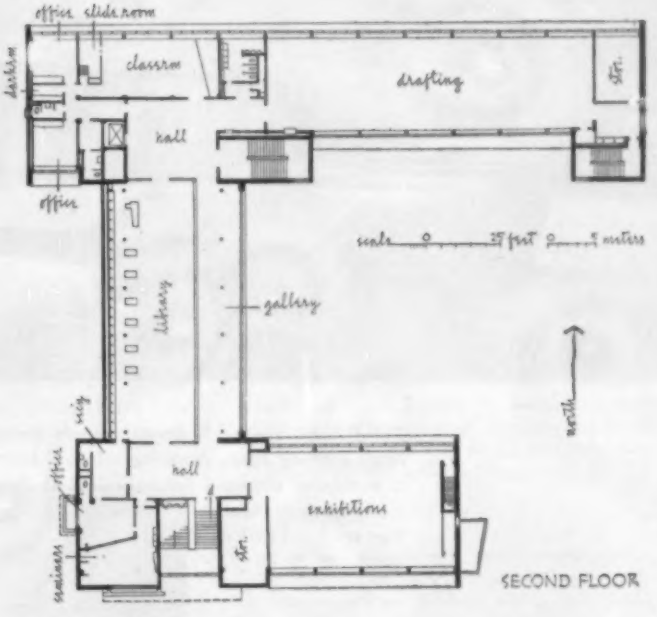
J. J. Pollard was the Structural Engineer for this building; E. Gritschke & Associates designed the mechanical plant, including plumbing, electrical, heating and air conditioning; J. A. Jones Construction Co. was the General Contractor.

West façade (photo below) *is almost entirely windowless, though offices facing south have large glass areas shaded by projecting canopies. Exterior materials, selected for their durability and ease of maintenance, include brick for walls and glazed tile for spandrels and copings. Exterior columns are faced with faience tiles. Aluminum-bar windows have partially fixed glass and projected type ventilators.* Photos: Joseph W. Molitor



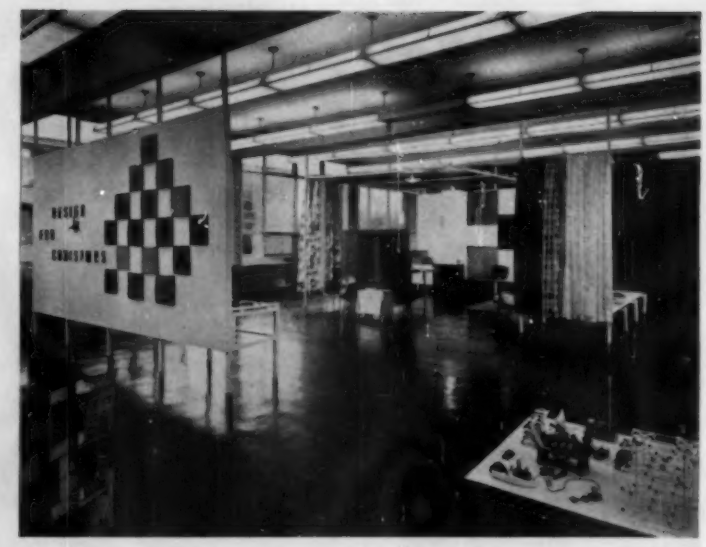






Georgia Tech: Architecture Building

Third floor (above) *is almost entirely devoted to a large drafting room, featuring bilateral lighting and a mezzanine arranged for individual study cubicles. Lighting throughout is by fluorescent fixtures. Ceilings are faced with acoustical tile.*



Large unobstructed room (right) *is primarily used for judgments and exhibitions. Auditorium and lecture room directly beneath accommodates all students of the architectural school. Flooring is asphalt tile, walls are faced with flexible wood veneer on plaster, and acoustical ceiling tiles are suspended. The room is windowless and air conditioned.*

Library (above) *has no windows but borrows natural light from the adjoining gallery and lobbies. Solid west wall provides ample shelf space. Air conditioning preserves books and makes for year-round comfort. Recessed fluorescents provide even level of illumination.*

Gallery (left) *serves as passage between north and south wings. Main entrance at far end* (also photo below) *is half story below gallery level.*

Materials & Methods

construction

Foundation: piling—Raymond Concrete Pile Company. **Frame, floors, & roof:** reinforced concrete: cement—Southern States Portland Cement Company. **Walls:** brick and ribbon windows. **Wall surfacing:** exterior: brick and glazed tile—Claycraft Company, marble bricks—The Georgia Marble Company; interior: glazed tile, plaster; restrooms, toilets: glazed tile. **Floor surfacing:** asphalt tile—Flintkote Company; rubber tile—Robbins Floor Products, Inc.; terrazzo; ceramic tile—The Mosaic Tile Company. **Roof surfacing:** built-up roof—Philip Carey Manufacturing Company. **Insulation:** acoustical: perforated, fiber ceiling tiles—Armstrong Cork Company; thermal: asphalt-coated cane-fiber board for roof—Celotex Corporation, cork and cellular glass for piping—Pittsburgh Corning Corporation. **Roof drainage:** cast-iron downspouts. **Windows:** aluminum sash—E. K. Geyser & Company. **Doors:** interior: solid panel; entrance: glass with aluminum frame—The Kawneer Company. **Hardware:** Panic devices in auditorium, lock sets, and overhead-door closers—Russell & Erwin Division of The American Hardware Corporation; hinges—The Stanley Works.

equipment

Specialized equipment: vault—Herring-Hall-Marvin Safe Company; public seating in auditorium—American Seating Company; chalkboard—Gotham Chalkboard & Trim Company, Inc.; master clock—Standard Electric Time Company; air compressor—Quincy Compressor Company. **Lighting fixtures:** recessed-fluorescent fixtures in classroom, lobby, and auditorium areas. **Electric distribution:** switchboard, transformers, and distribution system—Westinghouse Electric Corporation. **Plumbing & sanitary:** waterclosets, lavatories, accessories, and shower controls—Crane Company; toilet seats—C. F. Church Manufacturing Company; water heater and tank—J. J. Finnigan Company, Inc.; flush valves—Sloan Valve Company; cast-iron, galvanized-iron, and copper pipe. **Heating:** type: central heating plant; galvanized-iron ducts; copper pipe; unit heaters—Herman Nelson Products of American Air Filter Company, Inc.; exhaust fans—Buffalo Forge Company; controls—Powers Regulator Company. **Air conditioning:** Airtemp Division of Chrysler Corporation; refrigerant: Freon 12—E. I. du Pont de Nemours & Company (Inc.); diffusers—Anemostat Corporation of America; grills—Stewart Manufacturing Company; blowers and ventilators—Buffalo Forge Company; filters—American Air Filter Company, Inc.; cooling coils—Aerofin Corporation; controls—Powers Regulator Company.

El Camino College

Administration/Classroom Building

location | Alondra Park, California
architects | Smith, Powell & Morgridge*
* formerly Marsh, Smith & Powell

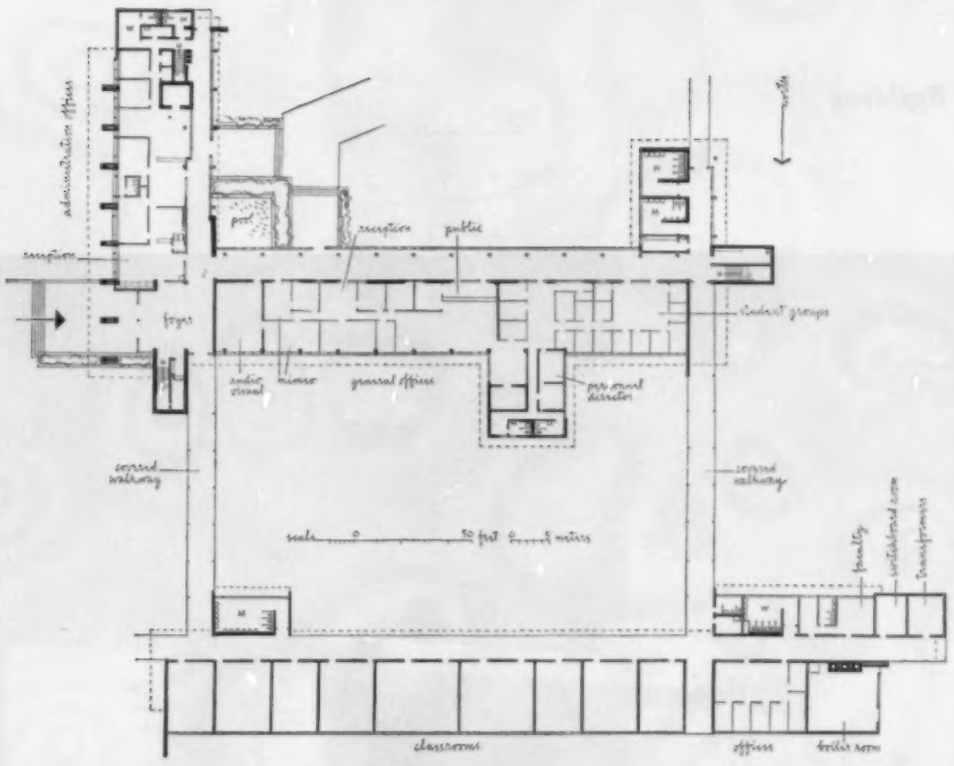
With the tremendous increase in population in the Los Angeles area, more and more campus-type junior colleges (public schools offering two-year courses after high school and also serving adult needs of the neighboring communities) are springing up. El Camino, founded in 1947 and being built on an 85-acre tract that was formerly part of a County park, is one such. Herewith are a few of the most recent buildings—the administration-classroom quadrangle (*these pages*) and a commerce building and student center (overpage).

A second floor of the administration wing contains classrooms, aligned along the north wall, similar to the scheme used in the one-story classroom wing. The ground floor of the administration wing is wholly composed of offices, for both administrative personnel and student groups; covered walks join this wing to the classroom wing to the north.

Reinforced concrete frames the two-story side of the quadrangle, while light steel-frame construction was used in the one-story classroom wing. Both concrete and brick were used for the walls, and above the main entrance to the administration wing (*above*), wall surfacing is of precast concrete units, forming a bold geometrical pattern that is repeated elsewhere on the campus.

Most sash are steel, though some aluminum is used at major entrances, etc. Acoustical materials cover ceilings of the building, while floorings are both vinyl and asphalt tile. North walls of the buildings use continuous glazing (*bottom*).

Hillman & Nowell were Structural Engineers for all buildings shown; Hammond Sadler, Landscape Architect. General Contractor for the administration-classroom unit was Finan Construction Co.



A pool and rich landscaping border the north (corridor) side of the two-story wing of the quadrangle. "Functional appointments throughout have made all of these buildings a pleasure to look at and a pleasure to use," comments Forrest Murdock, El Camino President.

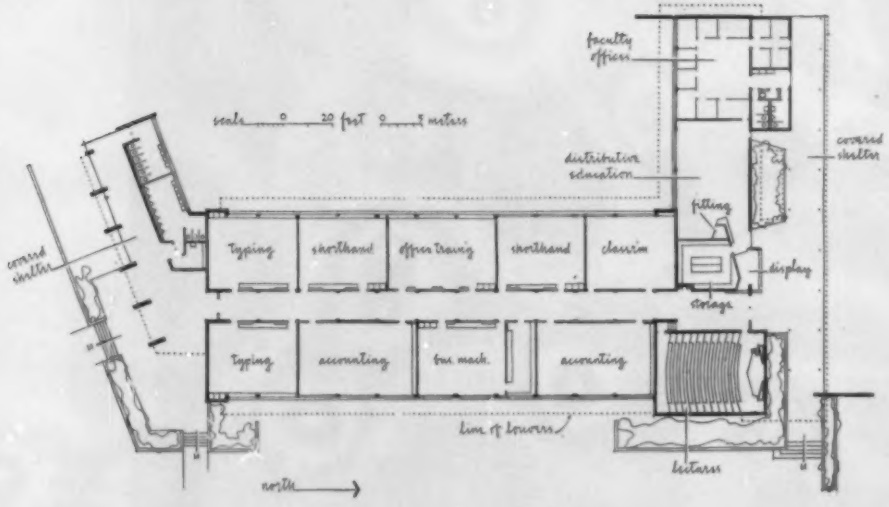
Photos: Julius Shulman

El Camino: Commerce Building

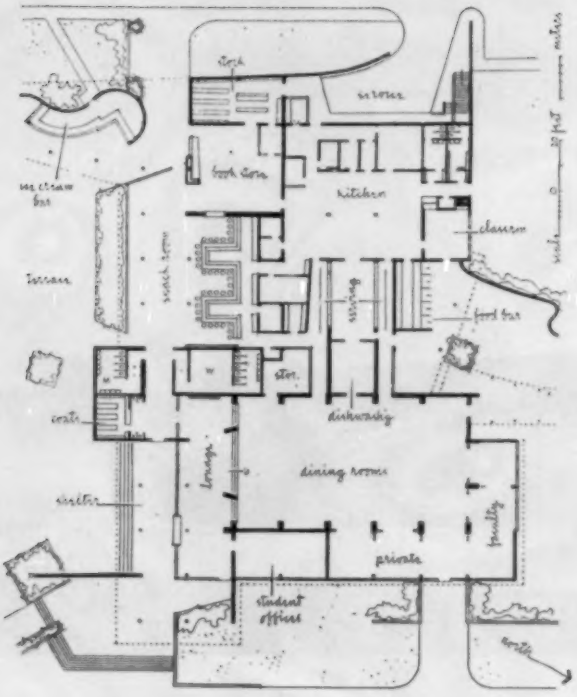
This building houses the classrooms for instruction in office operation and techniques. The long wing of east-facing classrooms is light-protected by continuous horizontal louvers. The central corridor of the building is lighted by a continuous skylight. As in the administration building, the concrete-framed structure combines concrete and brick for exterior surfacing. Other surfaces and finishes of the building are also similar.

Hahn-St. John Company was the General Contractor.

All El Camino buildings faced a common foundation problem: the level site consisted of heavy adobe soil. To provide proper surface drainage, two feet of sandy soil were imported to cover the site, and structural piers or columns had to be carried down through the adobe to concrete belled caissons.



El Camino: Student Center



The dining and recreational center of the campus is centrally located. The large cafeteria-dining room accommodates 700, in two parallel serving lines, while the fountain-snack room has a capacity of about 125. Two outdoor eating areas are also provided. The main dining space is daylighted from openings in the butterfly monitor roof (louvered on the east face) as well as from the side walls.

The lounge is three steps above the dining room level and is used on occasion as a stage, as a platform for a speaker or a dance band, and for similar uses. The space at the northeast corner of the main room may be subdivided into small dining or meeting rooms—or joined with the big room for large assemblages. The center also includes a student bookstore.

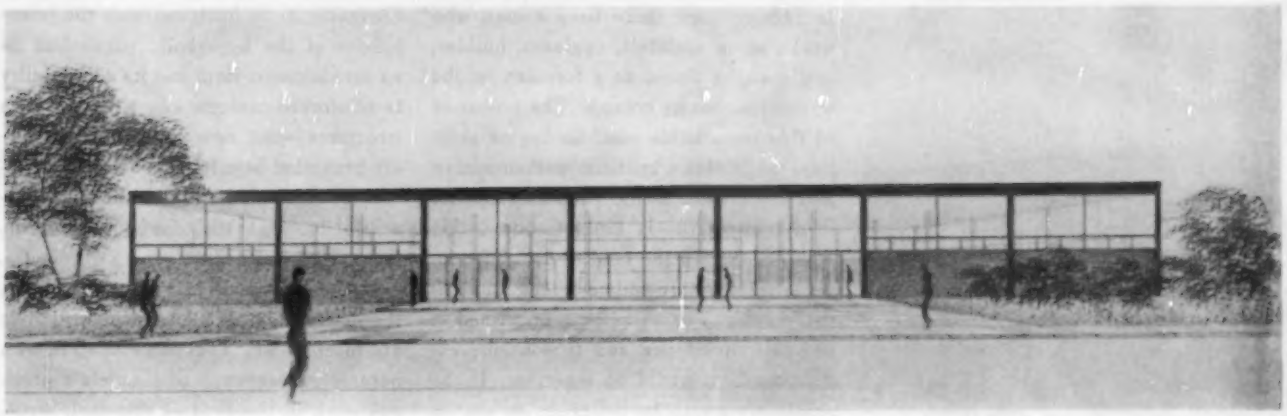
General Contractor for the center was Harvey Nichols Company.

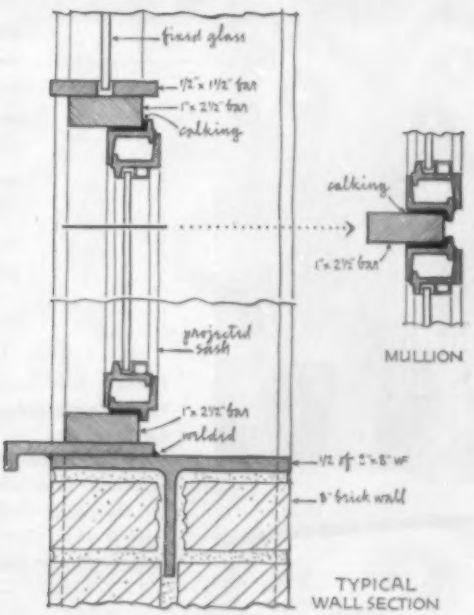
Photos: Hedrich-Blessing

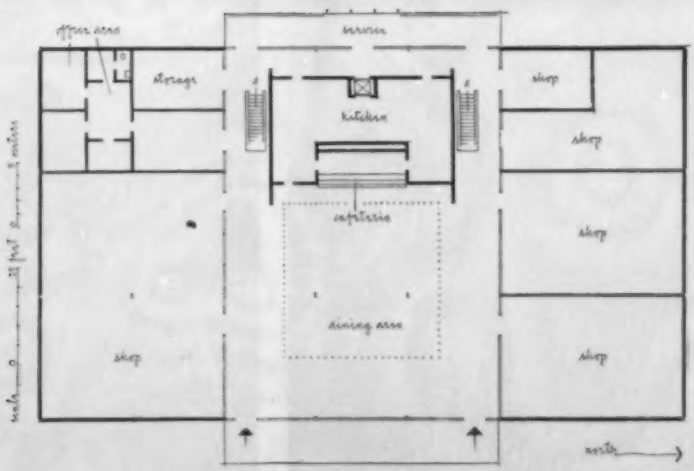
Student Commons

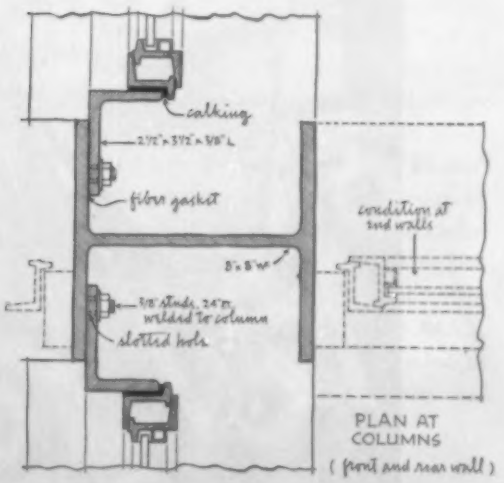
Contrary to the dictum, Form Follows Function, Mies van der Rohe places his design emphasis on the achievement of a satisfying building shape and later fits functions into it. "This is the only practical way to build, today," he states, "because the functions of most buildings are continually changing—but economically the buildings cannot change." This theory has been applied again for the Commons Building, one of many this architect —also director of the IIT Department of Architecture—has designed for the campus. At present, the Commons Building houses a student cafeteria, and, as a unique feature for an urban college campus, a shopping center for students, faculty, and staff. Space in the basement has been set aside for recreational facilities and meetings. However, as soon as amplified shopping facilities are available in yet another building to be constructed, the Commons will assume its intended function as a dining hall. In consonance with other structures on the campus, the building employs an exposed steel frame, painted black and combined with panels of buff brick and glass. The ceiling structure, also exposed and colored black, employs precast-concrete slabs. On the inside, the only permanent walls are those enclosing the kitchen. All other partitions are of concrete block or translucent glass, to a height of 7 ft, and removable when dining facilities are expanded. Dark terrazzo covers the entire floor area, irrespective of the placement of partitions. Above the 7-ft line, both exterior and interior walls are of glass. The central area is mechanically ventilated. Shops have natural ventilation through louvered exterior windows. Convectors are located along the perimeter of the building. Robert E. Hattis, Mechanical Engineer; Erik A. Borg Company, General Contractor.

client	Illinois Institute of Technology
location	Chicago, Illinois
architect	Ludwig Mies van der Rohe
associated architects	Friedman, Alschuler & Sincere









Work of Felix Candela

In Mexico City, there lives a man who works as an architect, engineer, builder, and even, at times, as a foreman on the structures that he creates. The possessor of this remarkable combination of abilities—he is also a brilliant mathematician and a professor at the Escuela Nacional de Arquitectura—is Felix Candela. He once wrote: "In the field of construction, we fortunately are ending a long, analytical period. The ideas that nourished it are fully developed and to continue exploiting them would be senseless. If the symptoms are to be believed, we are on the verge of a new creative epoch. Architects should be pleased with this situation, especially if they manage to regain their lost role as 'master builders,' since in order to build at such a time it perhaps will not be necessary to master so much science but to have some talent."[1]

In his own community, Candela is very much a master builder and actively experimenting with new structural concepts. Currently, he is intrigued with the possibilities of the hyperbolic paraboloid as an architectonic form and its adaptability to reinforced-concrete construction. Two structures—just now being completed—are presented here to demonstrate the talents of this architect and the inventiveness of his work with doubly curved surfaces. They are a church and a warehouse.

In the Iglesia de la Virgen Milagrosa, the design approach and structural style are inseparable. They were adopted as a natural consequence of Candela's previous work in the field of thin-shell structures and he regards this design as a long-awaited opportunity to allow pure structure to develop as the total expressive medium of the building. Over an unpretentious plan, the church enclosure has been formed by various combinations of hyperbolic-paraboloidical shells which have a thickness of only 1½ in. or less![2]

[1] *"Stereo-Structures," June 1954 P/A.*

[2] *For an analysis of this type of structural design, the reader may refer to "Warped Surfaces: Hyperbolic Paraboloids" by F. Candela, published in the Proceedings of a Conference on Thin Concrete Shells at MIT, June 1954. Also, see page 114 in this issue of P/A.*

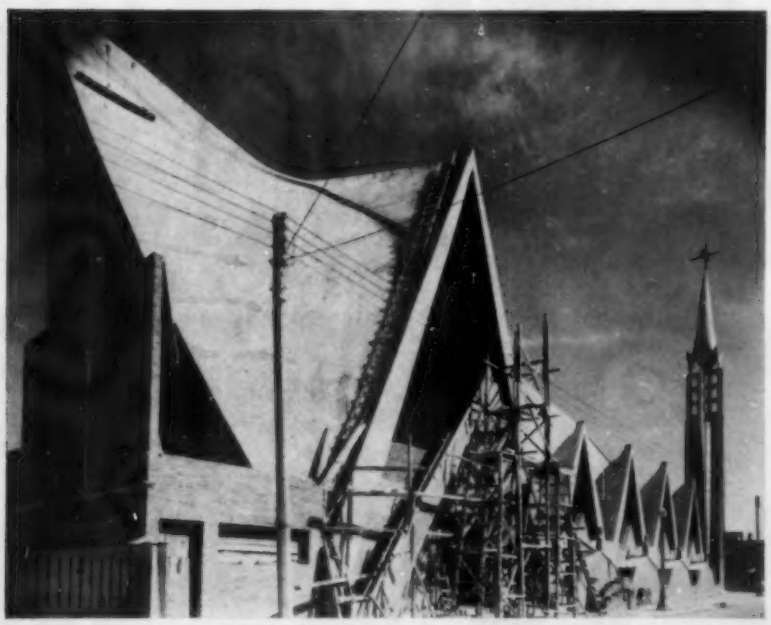
Photos show construction procedure for a typical vault. Reinforced-concrete frame is erected first (left: Candela standing atop the folded-slab roof over chapel). *Wood-joist generators are covered by ¾ in. planks to develop warped surface of the falsework for the shells* (below left). *Network of reinforcing steel is then placed and concrete is poured and vibrated* (below center *and* right).

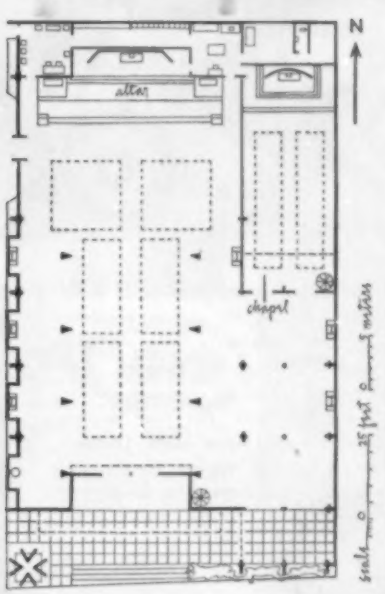
Photos: Antonio Candela

Iglesia de la Virgen Milagrosa, Mexico, D. F.

East elevation (right) *shows profile of roof as its height increases from 46 to 67 ft. Side entrance is being erected in west transept* (below). *Note confessionals between transept and campanile.*

Photos (except as noted): Erwin Lang





The architect reports that: "I was allowed full freedom in the design . . . and have enjoyed the actual building so much that . . . given the opportunity I would not modify its essential design."

Abundant natural lighting enters the nave through the immense transepts, the bays along both sides of the structure, and the triangular opening over the narthex—all to be filled with stained glass. Daylight enters the small chapel through clerestory windows in its folded-slab roof. The hall common to the chapel and the nave is directly lighted by openings between the brick walls and the vaults. Because of the structural form of the interior, no acoustical treatment will be needed to insure good hearing conditions.

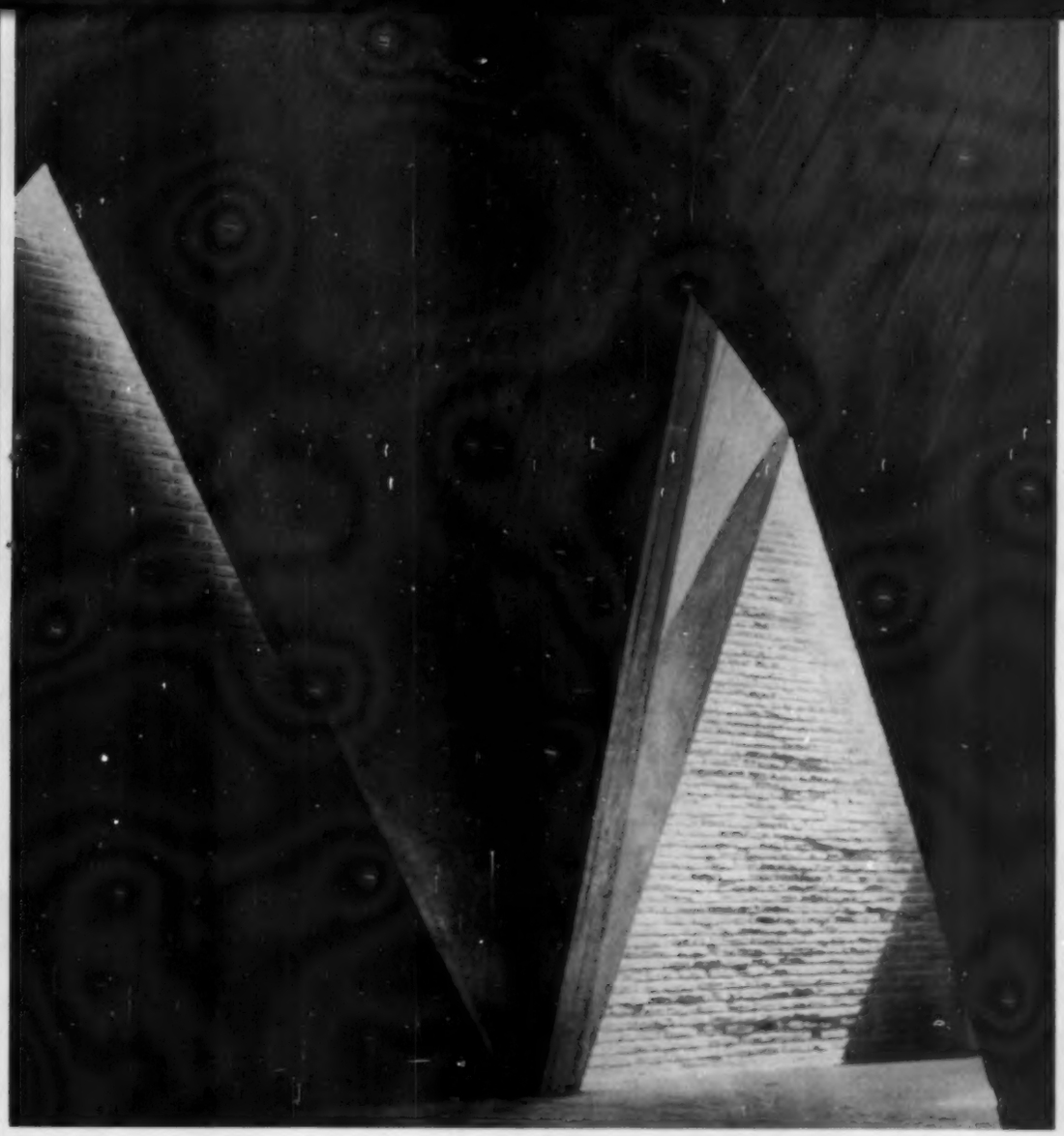
Color schemes are yet to be determined. Under consideration, however, is the use of colored mosaic over the entire roof surface. Interior concrete surfaces will be painted.

Office working time for the entire project, including preliminary drawings, took but two weeks. Structural computations —"rather boring, lengthy, and made at a later date"—proved the correctness of the original conception. Total ground area covered by the church is approximately 16,500 sq ft and construction was essentially completed in 10 months. Cost of the structure, including concrete floor and handmade brick walls, was $41,000 or about $2.52 per sq ft. Design and supervision fees are included in this amount.

Candela was assisted in the design by Fernando Mata who also was the draftsman for all of the plans. Architect José Luis Benlliure is presently executing the stained-glass windows. Cubiertas ALA S. A. (a building organization headed by Candela and his brother, Antonio) was General Contractor.

Work of Felix Candela

The site is bounded by low residential buildings on the east and by the priests' residence on the north. Stained glass will be placed in south elevation above narthex (above). *Candela questions the merits of intermediate section of campanile where the four warped surfaces dwindle into plane slabs* (below). *Feature was introduced during construction to increase height of the tower to 97 ft.*

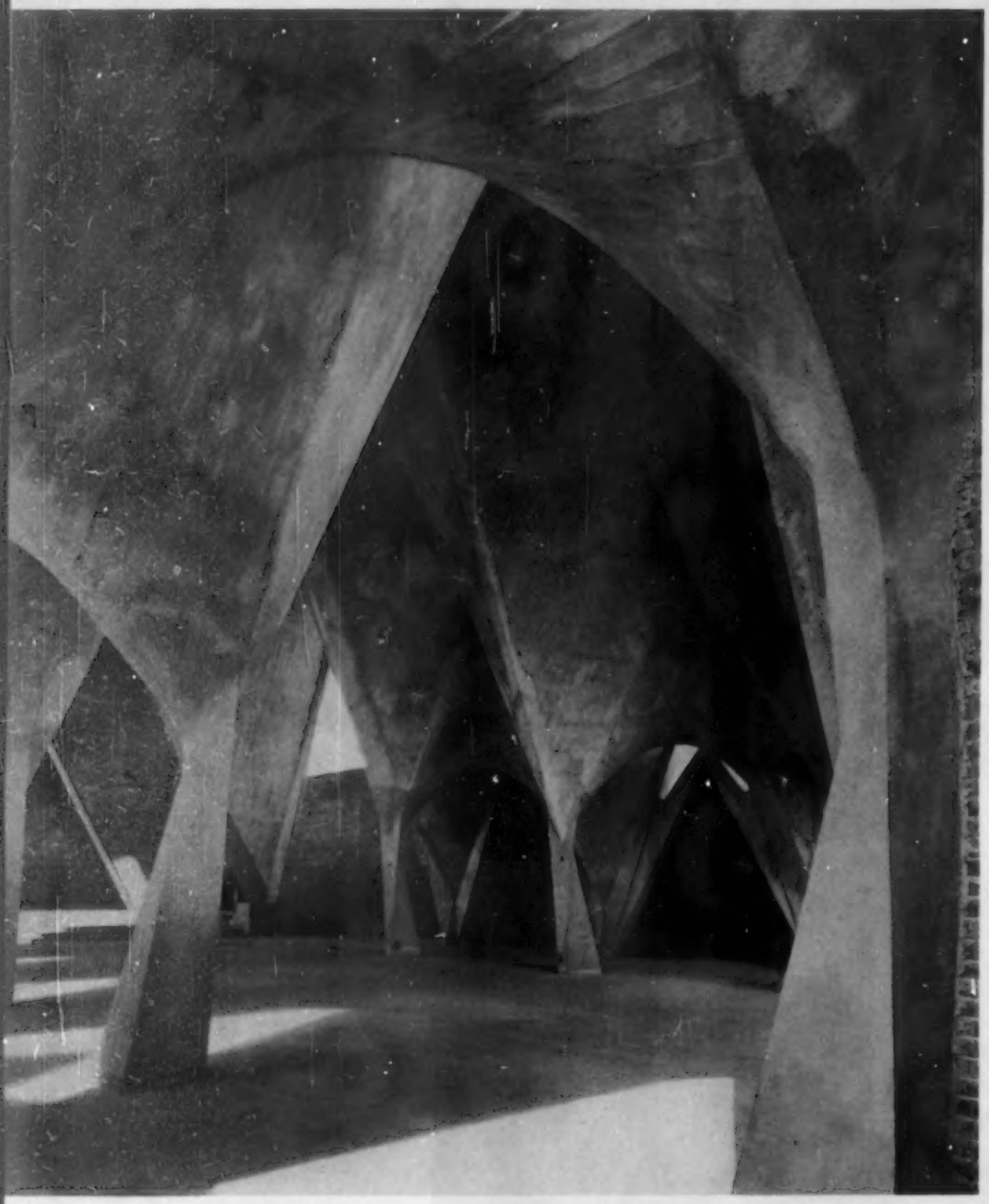


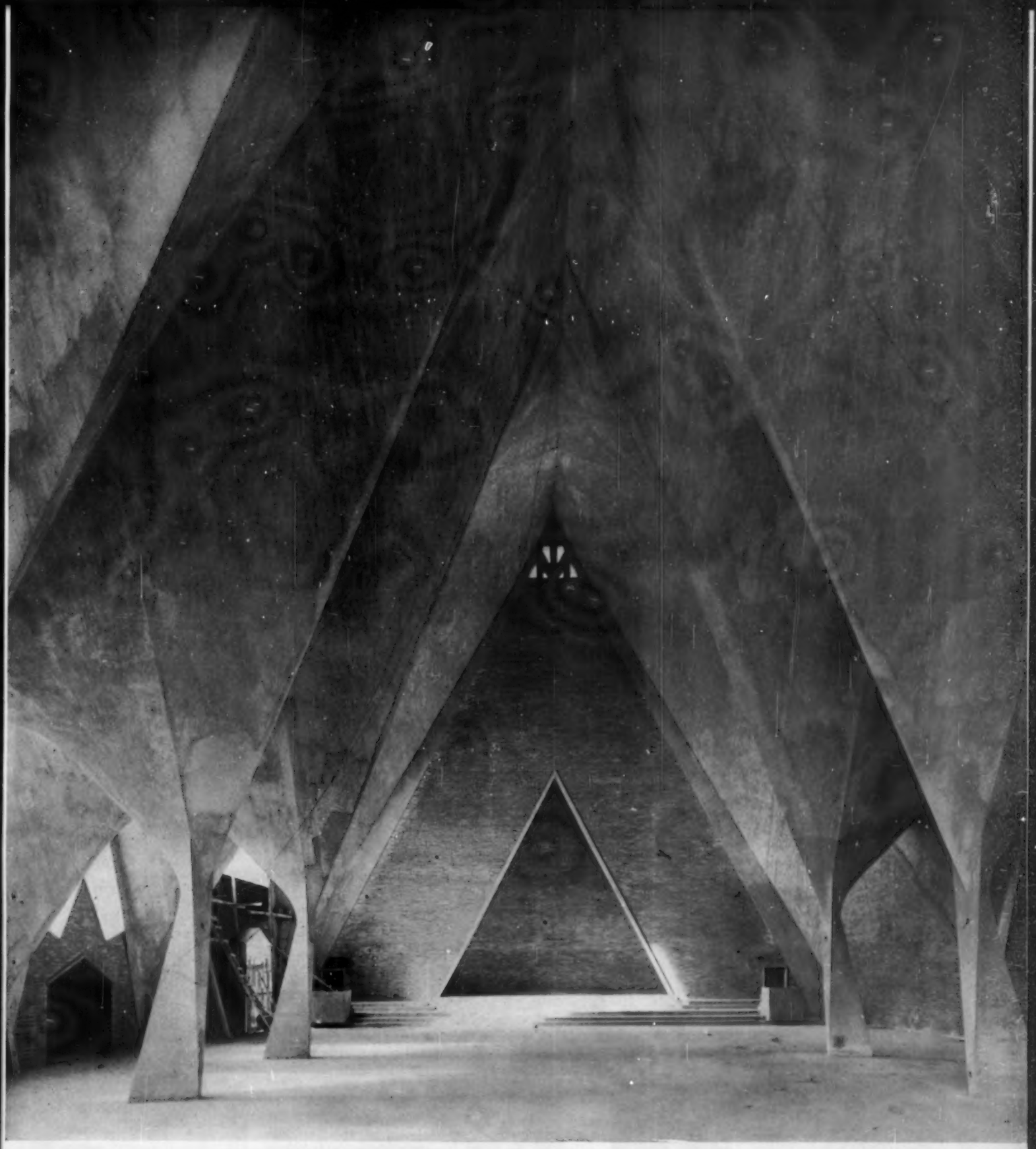
Two views of east interior elevation: Note textures of brick and concrete in photo taken in area between nave and east wall (above); *view from nave looking toward front side entrance* (below). *Workmen in construction scene* (right) *indicate scale of vaults.*

Photos: Lola Alvarez Bravo (top)
Antonio Candela (right)

Work of Felix Candela

View across nave indicates relationship of altar, pulpit, and entrance to small chapel (below). *Confessionals along west wall extend outward to sidewalk line* (above). *Voids above narthex* (bottom) *will contain stained glass.*





Size of typical bay in nave is approximately 40' x 22', width of side aisles is about 13', and vault springers are located 10' above floor level.

Rio's Warehouse

Another of Candela's most recent and exciting designs has been for a warehouse, also in Mexico City. Basic program requirements were to cover economically a triangularly shaped plot of about 55,000 sq ft and at the same time provide a small amount of roof light—preferably from the north, bays of about 50 ft, and a clearance height of 15 ft. The solution was found in a reinforced-concrete structure containing 36 umbrellas approximately 30′ x 50′ formed by hyperbolic-parabolic shells.

Traveling falsework, used for the roof shells, was subdivided into four tympans for each umbrella. Each tympan was struck and moved separately to the next pouring position (*acrosspage*). The curvature of the formwork was established by placing straight joists along one system of generators and straight ¾″ x 4″ planks along the second system (*see page 114 for additional discussion of the basic shape for each roof element*).

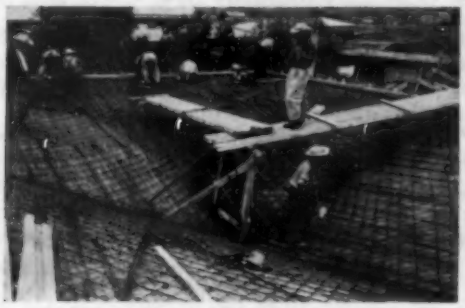
Employing high-early cement, a pour per week for each set of forms was possible. With four sets, the total time required to erect the umbrellas, columns, and footings was three months. Two-thousand psi concrete was poured throughout and vibrated even in the thin roof shells. A total absence of cracks, resulting from the good compaction of the concrete, made it possible to eliminate waterproofing of the roof shells.

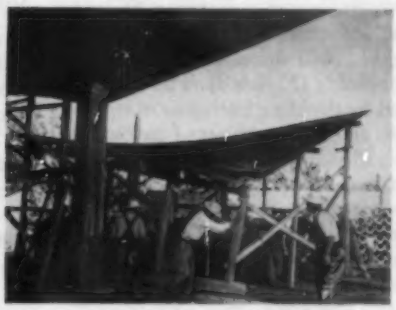
The columns, considered as built-in at the level of the floor slab, were designed to resist a horizontal seismic force of 2.5 percent of the weight of the umbrellas. The value of the horizontal resultant of the normal wind loads was lower than the considered seismic forces. As the effect of wind in the umbrella slab would be suction only, it was not considered in the design of the roof.

Mexico City's subsoil is considered one of the worst in the world on which to build a city. Under a superficial crust of natural and artificial fill, there is a 150-ft layer of very compressible clay having a water content that varies from 75 to 90 percent of its total weight. It is generally necessary to keep the contact load of the footings on the ground at a minimum. In search for an economical solution to this problem, Candela designed doubly curved concrete-shell footings for this warehouse (*acrosspage and page 115*). Structures of high intrinsic stiffness, with minimum thickness and weight, are obtained in this manner—providing a substantial economy in steel reinforcement as well.

The total cost of the warehouse structure, including columns and footings was kept at 50 cents per sq ft of ground projection. This amount—partially made possible by the Mexican labor situation—is about half the normal cost of a conventional steel structure with similar spans, roofed with corrugated asbestos-cement or aluminum sheets.

By tilting umbrellas slightly, Candela obtains a north-light, saw-tooth roof in an extremely economical manner. In a more recent warehouse of this type, he has placed glass blocks in the slabs for additional top-lighting. A 6-in. asbestos-cement drain pipe is located in the core of each column. Photos: Antonio Candela



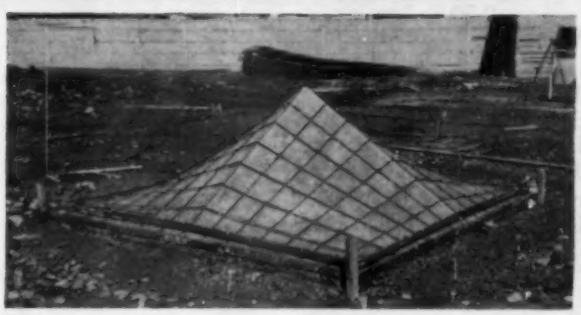


Thickness of each umbrella slab is only 1½ in. Formwork for individual tympan is dropped separately and moved to next pouring position (above).

1

2

3



4

5

6

Photos show construction sequence of concrete-shell footings (immediately above). *A hyperbolic-parabolic template is made of lumber and wire. Each tympan contains equally spaced wires connecting the sides of the base with equally spaced locations on the inclined apex members parallel to the respective sides of the base* (Figure 1). *This template is used to (a) determine the hyperbolic-parabolic surface of the soil footing which is dug in undisturbed earth* (Figure 2); *(b) determine the curvature of the grout which covers the earth footing* (Figure 3); *(c) develop a doubly curved concrete form over which the network of steel reinforcement is assembled* (Figures 4 and 5). *After the footings have been prepared with grout surfacing, reinforcement networks are superimposed and the 6" shells are then poured* (Figure 6).

structural design analysis of Rios warehouse

Roof: Here is how the basic shape of each umbrella-like roof element is obtained. Assume a rectangle whose sides measure 2 a and 2 b. If one drops its center a distance CC′ = f and joins point C with midpoints A and B of the four sides, the warped quadrangles formed will develop the contour lines of four hyperbolic paraboloids (*Figure 1*). The surface of each paraboloid is obtained by dividing each pair of opposite sides of a quadrangle into an equal number of parts and joining the corresponding divisions by straight lines. Thus, the two systems of straight generators of the surface are materialized. Each system is parallel to a director plane. As both director planes ACA and BCB are vertical and at right angles to each other, the paraboloids are equilateral. Every point on the surface is an intersection of two straight lines or generators contained in the surface. The crown of each paraboloid—or intersection of two horizontal generators, one of each system—coincide with the corners O of the basic rectangle.

Considering the two horizontal generators and the vertical line passing through the crown O as co-ordinate axes, the equation of the surface will be: $z = k\,x\,y$, where $k = \frac{f}{a\,b}$.

Plane sections parallel to the bisecting planes of the director dihedral xOy are parabolic. They are called principal parabolas and are respectively curved upwards, as at AB, or downward as at OC; hence, the surface is anticlastic or inversely doubly curved.

The fundamental work on the stress analysis of hyperbolic paraboloids was developed by the French engineer F. Aimond.[1] Because of the double curvature of this surface, the method of analysis can be limited to an investigation of the membrane state of stresses, provided that the resultant stresses remain low. Even with only membrane stresses one may be lead to complex expressions when investigating the effect of arbitrarily distributed loads;[2] however, the basic formulas become extremely simple if the loads are vertical and uniformly distributed in horizontal projection.

With a loading of the type just described, the expression of equilibrium along the three co-ordinate axes leads to these elementary equations $N_x = N_y = 0$, and, $S = -\frac{g}{2k} =$ constant (S being the unit shear stress times the shell thickness and g the vertical lead per unit area of ground projection) which represent a plane pure-shear state of stress, identical at every point of the surface.

Principal tensile and compressive stresses are directed along the bisecting lines of the directions x y of pure shear —that is, along the principal parabolas—and their horizontal projections have the same absolute value as the shear stresses. Hence:

$$N_I \simeq -N_{II} \simeq S = -\frac{g}{2k}$$

Under this assumption (but not with other types of loads) there are no stresses normal to the boundary generators which are directions of pure shear. Nonequilibrated shears accumulate along the four sides of the warped quadrangle, resulting in tangential tensile or compressive forces (according to the method of support for the surface). These are the only reactions of the shell. That is, the shell transforms vertical loads into tangential forces directed along their four straight edges.

Tilting the umbrellas actually moves the crowns of the paraboloids along the edges that remain horizontal (*Figure 2*). (In the illustrations and example below, the metric system has been used in order to operate with exact quantities and to simplify computations.)

The lower (L) and upper (U) paraboloids have the same equation, since

$$k_L = \frac{1.50}{3.75 \times 7.625} = 0.0525$$

$$k_U = \frac{2.50}{6.25 \times 7.625} = 0.0525$$

or $z = 0.0525xy$.

Thickness of slab is 4 cm (1½ in.)

Slab load $= 4 \times 25 = 100$ kg/m²

Live load and waterproofing $= 100$ kg/m²

Total load $= g = 200$ kg/m² (41 psf)

Because of the relatively small slope of the surface, this load is approximatively considered as evenly distributed in

[1] *F. Aimond, "Etude Statique des Voiles Minces en Paraboloide Hyperbolique Travaillant sans Flexion," Proceedings of International Association for Bridge and Structural Engineering, Vol. 4 (1936), pp. 1–112.*

[2] *F. Candela, "Structural Applications of Hyperbolic Paraboloidical Shells," Journal of the American Concrete Institute, Vol. 26, No. 5, Title No. 51-20 (January 1955).*

figure 1

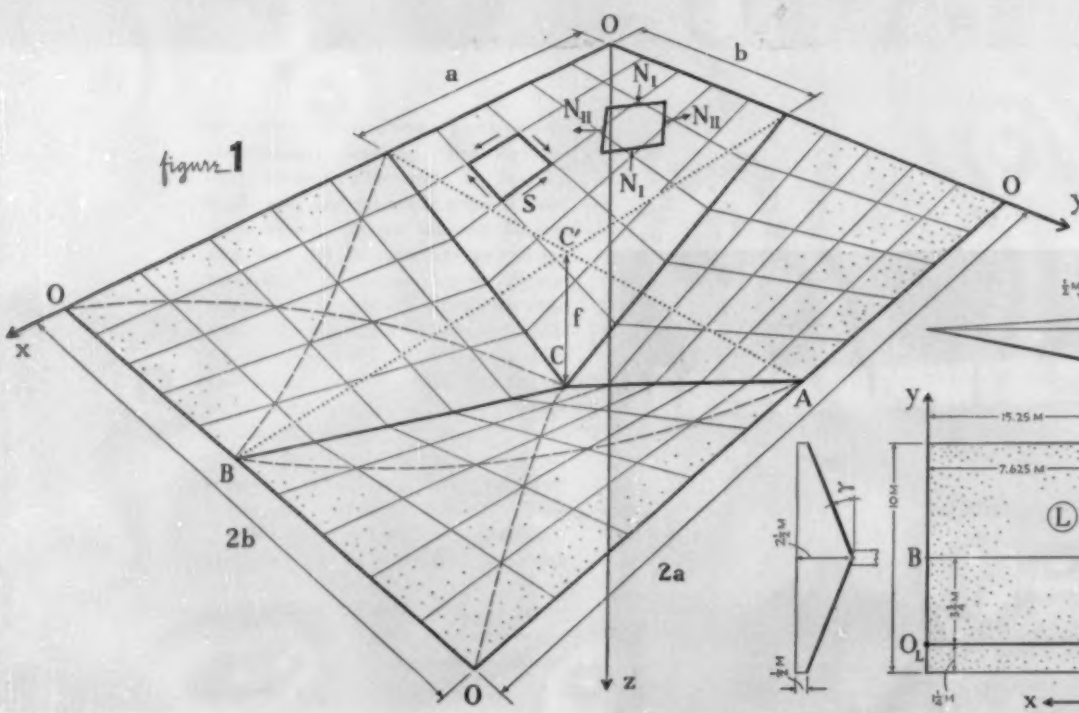
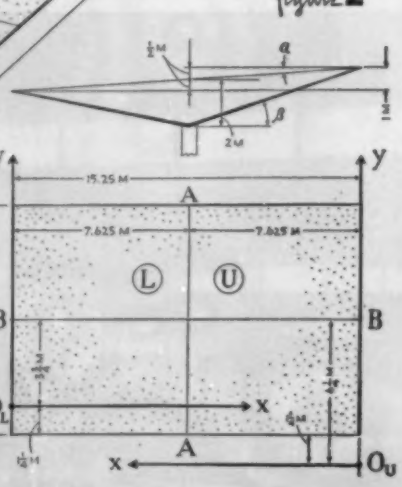


figure 2



ground projection. Differences between the value of stresses obtained by this simplified assumption and those computed by accurate consideration of the real loads[2] amount to no more than five percent in this case.

Unit stresses times shell thickness:

$$N_I = -N_{II} = S = -\frac{g}{2\,k} = -\frac{200}{0.105} = -1904 \text{ kg/m}^1 \text{ (1280 lb/ft)}.$$

Compressive or tensile stresses in concrete:

$$f = \frac{1904}{4 \times 100} = 4.76 \text{ kg/cm}^2 \text{ (68 psi)}.$$

Neglecting tensile strength of concrete, the necessary diagonal tensile reinforcement is:

$$A_s = \frac{1904}{1200} = 1.59 \text{ cm}^2/\text{m}^1 \text{ (0.075 sq in./ft)}.$$

One-quarter in. bars at 8″ o.c. would be sufficient; however, ⅜″ ϕ bars at the same spacing were specified as an additional precaution against cracking.

Tensile forces along the outer edges increase from zero at corners O to maximums at center points A and B

$$T_A = \frac{S\,a}{\cos\,\alpha} = \frac{1904 \times 7.625}{0.9979} = 14{,}700 \text{ kg (32,400 lb)}$$

$$T_B = S\,b = 1904 \times 5 = 9520 \text{ kg (21,000 lb)}$$

requiring a maximum tensile reinforcement at these points

$$A_{sA} = \frac{14{,}700}{1200} = 12.25 \text{ cm}^2 \text{ (1.90 sq in.) or five ¾″ } \phi$$

$$A_{sB} = \frac{9520}{1200} = 7.94 \text{ cm}^2 \text{ (1.23 sq in.) or three ¾″ } \phi.$$

Compressive forces along the inner edges increase from zero at points A and B to maximums at point C

$$C_{CAU} = \frac{2 \times 1904 \times 7.625}{\cos\,\beta} = \frac{29{,}260}{.9502} = 30{,}800 \text{ kg (68,000 lb)}$$

$$C_{CB} = \frac{2 \times 1904 \times 5}{\cos\,\gamma} = \frac{19{,}040}{.9285} = 20{,}500 \text{ kg (45,000 lb)}$$

which require the slab thickness to be increased at the inner valleys forming compressive members capable of resisting these resultant forces (*Figure 3*).

Footings: The very low bearing capacity of foundation soil in Mexico City requires very amply proportioned footings. Shell footings of the same form as the roof umbrellas, but inverted, offer an economical solution for this problem.

Dimensions of a typical footing are:

2 a = 2 b = 3 m (10 ft)

f = 1 m (3.3 ft).

Thickness of slab = 15 cm (6 in.)

$$k = \frac{f}{a\,b} = \frac{1}{1.50 \times 1.50} = 0.445.$$

Design load on each column:

$$P = 10 \times 15.25 \times 200 = 30{,}500 \text{ kg (68,700 lb)}.$$

Soil reaction (without consideration of columns and foundation-slab weights):

$$p = \frac{30{,}500}{3 \times 3} = 3390 \text{ kg/m}^2 \text{ (694 psf)}.$$

Unit stresses times shell thickness:

$$N_I = -N_{II} = S = -\frac{p}{2\,k} = -\frac{3390}{0.89} = -3800 \text{ kg/m}^1 \text{ (2570 lb/ft)}.$$

Compressive or tensile stresses in concrete

$$f_c = \frac{3800}{15 \times 100} = 2.54 \text{ kg/cm}^2 \text{ (36 psi)}$$

which could easily be resisted by the concrete alone without steel reinforcement. A mesh of ⅜″ ϕ bars, however, was actually used as temperature steel.

Tensile forces at the exterior edges have a maximum value at the midpoint of each side. The amount is:

$$T = 3800 \times 1.50 = 5700 \text{ kg (12,500 lb)}$$

requiring a steel area of

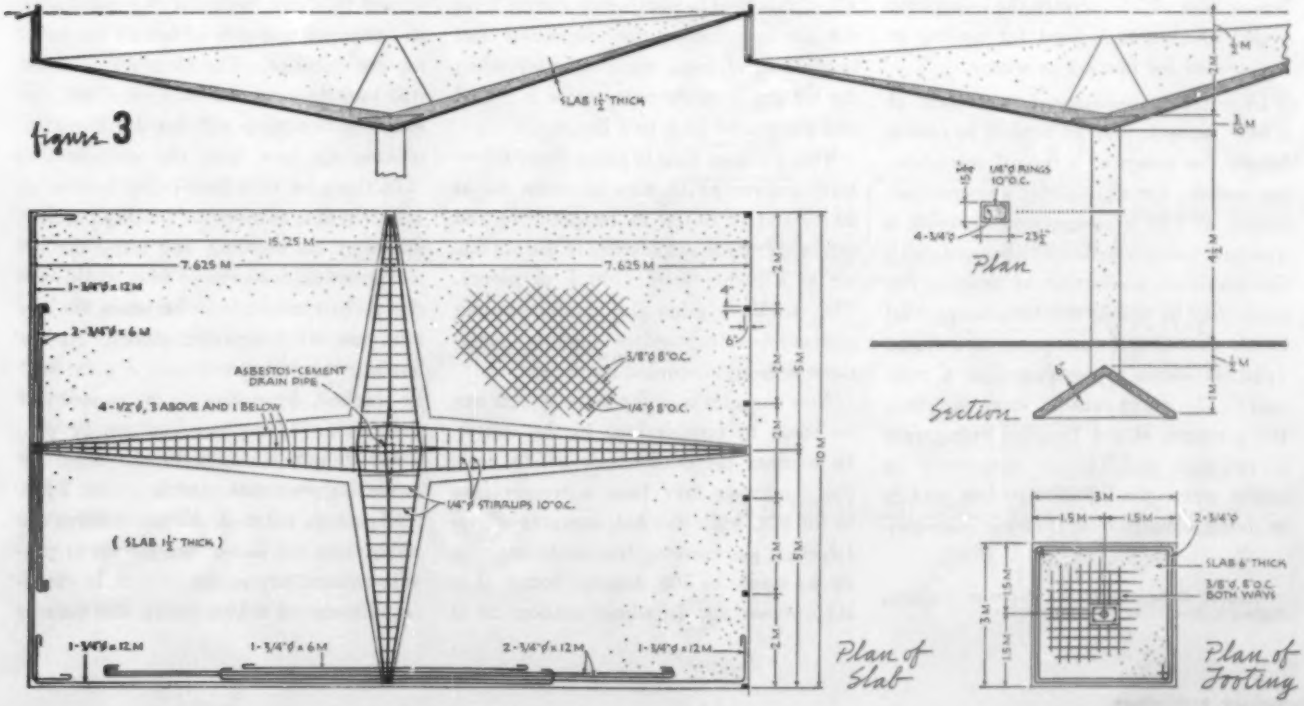
$$A_s = \frac{5700}{1200} = 4.75 \text{ cm}^2 \text{ (0.74 sq in.) or two ¾″ } \phi \text{ bars.}$$

Compressive forces at interior edges have maximum value at the apex of the paraboloid

$$C = \frac{2 \times 5700}{\cos\left(\text{ang tg } \frac{1}{1.5}\right)} = \frac{11{,}400}{.8323} = 13{,}700 \text{ kg (30,000 lb)}$$

which can be taken without danger of buckling by the angular members formed by the intersection of both contiguous surfaces. (All computations were made by slide rule, since no more accuracy was considered necessary.)

figure 3



the heat pump in air conditioning

by James K. Campbell*

When we speak of heat and cold we think of them as two separate things. In summer we are correct in closing the windows in the morning to keep heat out of the house during the forenoon, but in winter when we put up storm windows and weatherstrip doors to keep the cold out, we are really trying to keep the heat in. Then we remember our high-school physics and realize that heat is something real —a form of energy—but that cold is nothing at all, simply an absence of heat.

A mechanical-cooling system, which is a contrivance to take heat from a building and dispose of it where it will no longer annoy us, may be correctly called a heat pump, because it takes heat from one place and forces it to a new location. Usually, however, the term heat pump is used to indicate a device which can not only cool the house in the summer but can also heat it in the winter.

It is a fundamental principle that heat flows from a higher-temperature source to a lower-temperature destination. This is the principle which governs all transfers of heat which occur in the heat-pump cycle, whether it is used for cooling in summer or for heating in winter.

In order to understand the action of a heat pump it may be helpful to review briefly the action of a typical refrigerating system. Let us consider a system consisting of (1) a compressor in which a gaseous refrigerant is compressed with the resultant production of heat, (2) a condenser in which the hot, compressed gas is cooled and condensed to a liquid (just as steam is condensed in a radiator), (3) an expansion valve in which the pressure of the liquified refrigerant is reduced, and (4) an evaporator or cooler where the liquid vaporizes, and in so doing, absorbs heat from the surroundings. The gaseous refrigerant then returns to the compressor and the cycle is repeated again and again.

In heating and cooling a building the action of a heat pump is as follows: In summer the heat from the house is absorbed by the liquid refrigerant and this heat is what causes it to vaporize in the evaporator. The compressor then takes this refrigerant gas and boosts the pressure and the temperature—the temperature to a point above that of the condenser and the pressure to a point at which condensation will take place as soon as the heat in the refrigerant gas is allowed to escape to a lower-temperature destination, namely, the air surrounding the condenser.

The amount of heat handled in this condensing cycle is much greater than just the heat of compression, since it also includes the latent heat absorbed by the refrigerant in the process of vaporization. The total amount is several times as great as the heat equivalent of the electric energy required to operate the compressor. All of this heat is pumped or drawn from the air surrounding the evaporator and is discharged from the condenser when the hot gas from the compressor is cooled and condensed back to a liquid.

This pumped heat is taken from a low-level source, which may be room air at 80 F, and is raised in temperature and rejected from the condenser to the outside air at a higher level (100 F or more). This is a description of a comfort-cooling system operating under summer conditions with an air-cooled condenser.

Now consider how the same system can be made to furnish heat in the winter. In summer the outdoor air which cools the condenser may have a temperature in the 90s, while the hot, compressed, refrigerant gas entering the condenser may be as much as 100 degrees hotter than the outdoor air. In winter outdoor air is still allowed to blow across the coils of the condenser, but the flow of refrigerant is *reversed* so that the condenser becomes the evaporator and the evaporator becomes the condenser. The low-pressure liquid refrigerant in what is now the evaporator will vaporize with the absorption of heat and will drop in temperature to minus 10 F or thereabouts. Thus, a favorable temperature difference will be created, which will enable the refrigerant to absorb heat from the surrounding air, even at outdoor temperatures around the freezing point. After this heat has been absorbed, the refrigerant will next be boosted in temperature and pressure by the compressor and will give off its heat to the indoor air as the hot refrigerant gas is cooled and condensed in the former evaporator coil, which is now acting as the condenser. This action is referred to as reverse-cycle heating.

Figure 1 shows a system using a finned coil as an evaporator for cooling air in summer. If the direction of flow of the refrigerant, as shown in Figure 2, is reversed this coil becomes the condenser and becomes a source of hot air for heating the building. The former condenser will then become the evaporator and, as stated previously, will act as a cooler, picking up heat from the outdoor air.

In the case of a heat-pump system of sufficient size to meet the cooling requirements of the building and using the atmosphere as a source of heat, the lower the outdoor temperature becomes, the less heat can the refrigerant absorb. As the outdoor temperature drops, a point will be reached, depending on the capacity of the system, where heat can not be provided in sufficient quantity to meet the increasing requirement of the house. When this point is reached, the alternatives are to increase the size of the system or provide an auxiliary source of heat. In choosing the size of a heat pump, the amount

* *Partner, Eadie, Freund and Campbell, Consulting Engineers, New York, N. Y.*

of original investment should be balanced against operating cost, so that the system will require auxiliary heat during comparatively few days in an average winter.

Electric-resistance heaters, located either in the heat-pump unit itself or in individual rooms, are the simplest source of auxiliary heat, being inexpensive to install and easily controlled automatically. Water is another source of auxiliary heat if available in a reasonable quantity and if not too close to freezing temperature. While water is cheaper in operating cost, its use might require a more expensive installation than electric heat.

Another heat source available for a small building on a plot of sufficient size is the earth. Pipe coils or grids—laid in the ground at a depth of five or six ft where the temperature is practically constant summer and winter—may be used either to heat or to cool water or refrigerant circulated therein. The earth temperature in the central portion of the U. S. will average a few degrees above or below 55 F. If water is circulated through long lengths of underground pipe it will either give off or take on heat until it reaches the average earth temperature. The earth is thus able to act as a heat source in winter and as a heat sink in summer.

While the heat capacity of the earth is practically unlimited, there is a limit to the rapidity with which heat can be taken from or replaced in a limited area. The use of earth heat is therefore limited to low buildings which do not occupy the whole parcel of ground in which the pipes are laid.

Where available in sufficient quantity, water may be a more desirable year-round source of heat and heat sink than either the atmosphere or the earth. For large buildings in particular, an ideal source of earth heat is found in well water, which usually remains at a fairly

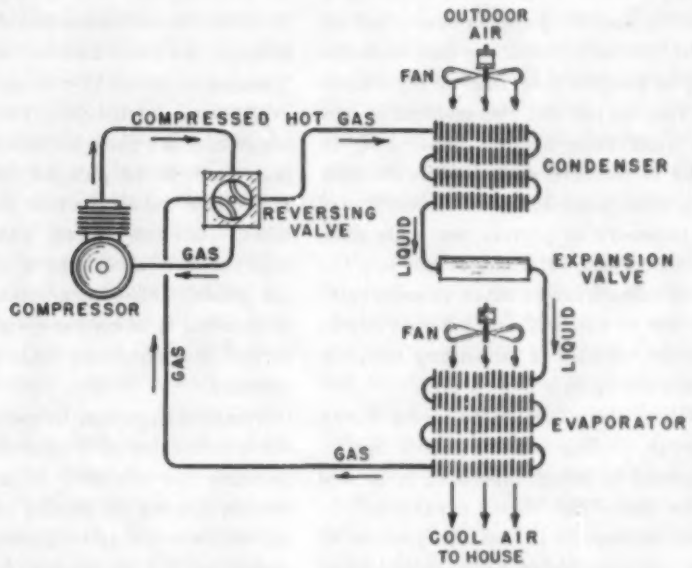
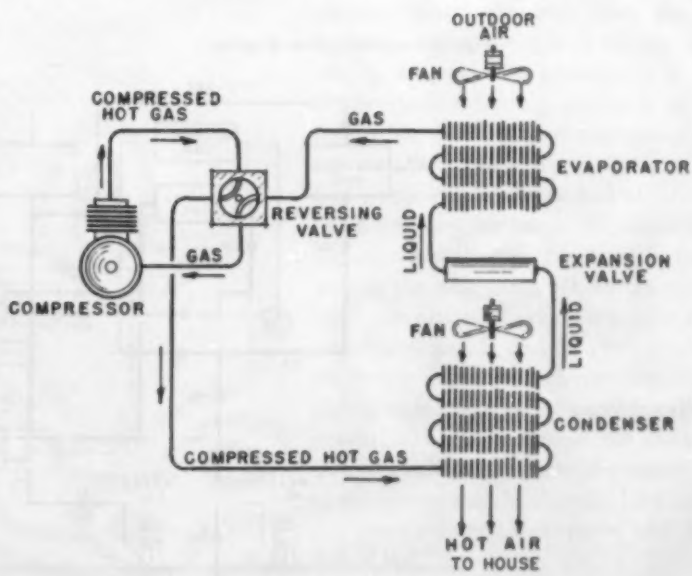


Figure 1—cooling cycle.

Figure 2—heating cycle.



constant temperature throughout the year. If well water is available in sufficient quantity and the pumping cost is not too great, the only controlling considerations may be possible governmental regulations limiting its use and the problem of how the waste water may be disposed of. In order to conserve water and incidentally to prevent overloading the sewer, it may be necessary to provide two wells some distance apart, returning to one well the water taken from the other. In some cases the use of two wells of different depths may be effective in preventing temperature build-up in a limited area.

When air is cooled by being blown through cooling coils in which the refrigerant is being vaporized, it is said to be cooled by "direct expansion." In large systems it is common practice to use the evaporator as a chilled-water cooler; instead of being cooled directly, the air is cooled by being blown through chilled-water coils in the air ducts.

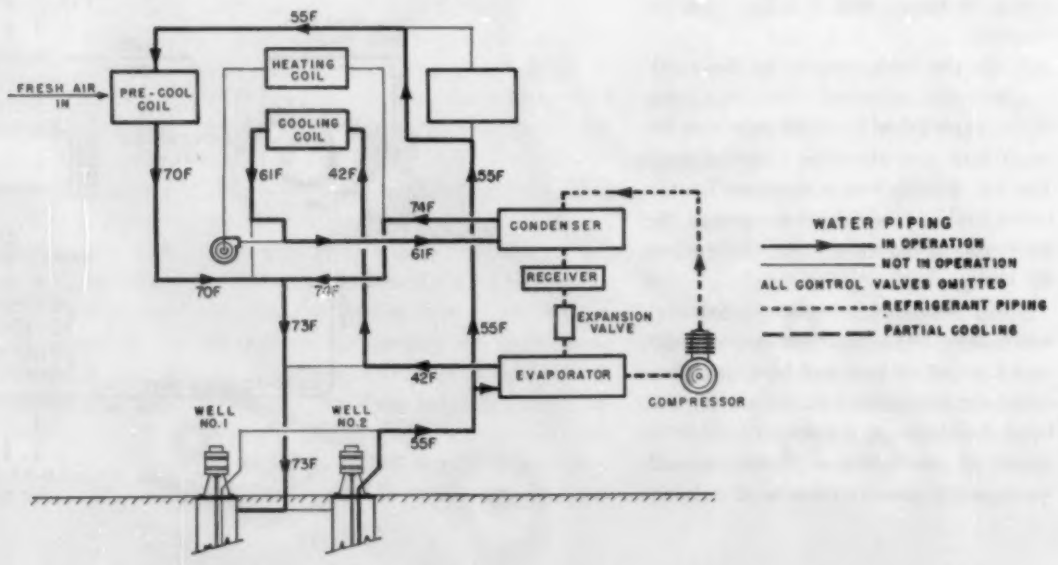
In such a system using well water, for instance, the change from summer to winter operation would probably be made by rerouting the flow of water rather than by reversing the flow of the refrigerant. In winter the well water would be pumped through the chilled-water cooler, where it would be forced to give up heat to the evaporating refrigerant. The condenser would then act like a hot-water boiler and heat water to be pumped through heating coils in the air ducts or through radiators, convectors, and panel heating systems, and thence back through the condenser. This arrangement would still be referred to as reverse-cycle heating although the refrigerant cycle itself is not reversed.

Several devices may be used to increase the effectiveness of heat transfer and to increase the efficiency of a heat-pump system. During the cooling cycle, part of the well water may be passed through a precooling coil to precool fresh air being admitted to the building. The remainder of the water taken from the well may be cooled in the evaporator, used in the cooling coil to cool the air in the building, and then used to cool the condenser before being discharged to waste or to the well which is being used for a heat sink.

During cold weather, on the other hand, part of the well water may be first passed through a heat-recovery coil through which exhaust air from the building is blown, giving up part of its heat to the water instead of wasting all of it to the outdoor air. This water may then be passed through the precooling coil, which will now act as a preheating coil for fresh air.

Figure 3 shows the flow diagram of the summer operation of a heat-pump system making use of two wells and a condensing refrigeration cycle for cooling. It will be noted that part of the water from Well No. 2 is shown going to the evaporator, while the remainder of the well water goes to the precooling coil through which fresh air is admitted. The water which is chilled in the evaporator passes through the cooling coil to cool the air in the building, after which this water is used in the condenser before being discharged to Well No. 1. This diagram shows the approximate temperature of

Figure 3—summer-flow diagram.



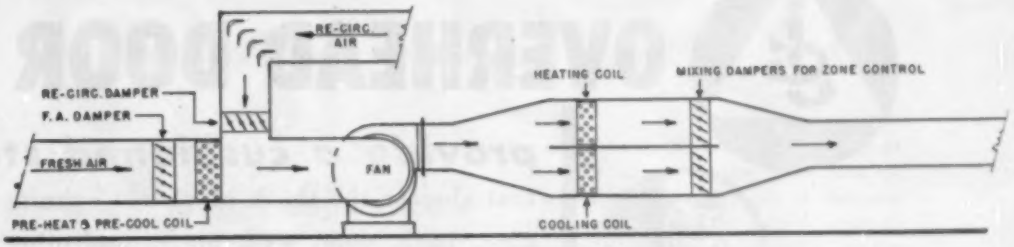


Figure 5—arrangement of fan, coils, and dampers.

the water, which might occur in different parts of the circuit.

Figure 4 shows the same system in winter operation. In this case, as before, part of the well water goes to the evaporator. The other part of the water goes first through a heat-recovery coil where it takes up heat from the exhaust air. This heat is transferred to the fresh air passing through the preheating coil—the same coil which acted as a precooling coil in summer.

In many buildings having inside spaces remote from the outer walls, waste heat from lights, motors, machines, or occupants may have to be removed by mechanical cooling even during the heating season. In Figure 4 the dash lines show how part of the water which has been chilled in the evaporator may be used for cooling such portions of the building when required.

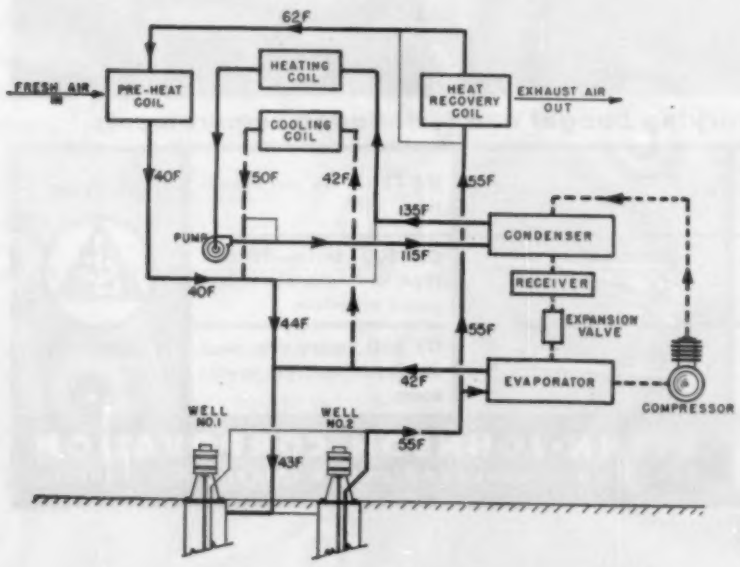
Figure 5 shows a typical arrangement of a ventilating fan with fresh air inlet having a coil used either for preheating or precooling. Beyond this coil is the recirculation duct with its damper. This damper is connected by linkage with the fresh-air damper, so that one opens as the other closes. Beyond the fan are the heating and cooling coils and a pair of mixing dampers also having interlocking linkage to permit control of the air temperature in the discharge duct. Only one pair of dampers is shown at this point in the diagram, but in practice there may be several pairs, each pair controlling the temperature in that portion of the building supplied through its discharge duct.

Since the principal feature of a heat pump is a refrigeration cycle, *it follows that heat pumps will be installed only where cooling is required.* Where the installation of a cooling system has been decided on, the question as to whether to install a heat pump will depend on several considerations. The first consideration will be the cost of electric energy compared to the cost of fuel. In an average installation, a heat pump may be expected to deliver about three times as much heat as would be furnished by the electric energy used for operating the compressor. The second consideration may be the availability of well water as a heat source and heat sink if the system is to be of considerable size. If the system is to be small—in which case an air-to-air installation will be the simplest—the principal consideration may be the severity of the winters in the location in question and, if in a northern location, the cost of electric energy for auxiliary heat.

If economic conditions are favorable, the heat pump will provide an almost ideal installation. It will cool in summer and heat without fuel in winter. Humidity will be controlled throughout the year. The air filters will keep out dust and dirt, preserving the furniture and decorations. Closed doors and windows will exclude drafts as well as street noises and dirt. All of this will be accomplished automatically, including the change from heating to cooling and vice versa.

Now that several of the largest manufacturers of air-conditioning equipment are producing packaged heat pumps designed for 5- to 8-room houses, many a homeowner will wonder whether he should install one in his present home. If he is already considering the installation of a cooling system, his decision whether to consider installing a heat pump should be influenced by the type of heating system he has and how satisfactory it is. If the existing heating system is satisfactory, the desirability of duplicating its functions by the heating facilities of a heat pump will depend on how attractive the homeowner considers the automatic operation and absence of fuel which characterize the heat pump. If, on the other hand, the existing heating system is not satisfactory and is due for replacement, the owner might well give serious consideration to having a heat pump installed—after taking into account the various factors which will influence the operation of the system, such as climatic conditions and electric rates as compared with the cost of fuel.

Figure 4—winter-flow diagram.



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4422 no. ravenswood ave. • chicago 40, illinois

by Ben John Small

spec small talk

sprayed plaster

I wonder if you read the Metal Lath News published by the Metal Lath Manufacturers Association as avidly as I do? You can almost always find therein some contribution to building technology. The latest wrinkle is—well, listen to them tell it.

At long last the Machine Age has arrived in the plastering industry! For thousands of years the application of plaster has been by hand. In modern industrialized countries, the plasterer has been using a trowel to put on the mortar, but there still are areas where even a trowel is not available. Where that is the case, whatever is used as mortar is thrown or daubed in place by the workman, using only his hands. It has been the dream of inventors, both in and out of the plastering industry, to develop a machine to apply mortar. Pneumatically-applied concrete long has been in use but only recently has there been available a machine which would apply gypsum-lightweight-aggregate plaster. Even after development of the first plastering machine, it still continued to be the usual practice to apply the scratch coat over metal lath by trowel. The operator of the machine encountered some difficulty in holding the nozzle at an angle which would prevent an excessive amount of mortar from passing through the openings of the metal lath. For this reason, use of machine-applied plaster over metal lath generally was confined to the brown coat.

Now the E-Z-On Corporation has found a way to alter the nozzle so that the scratch coat as well as the brown coat can be applied very readily on metal lath by machine.

The solution to the use of the machine for application of the scratch coat over metal lath lies in reducing the frequency of emission of material at the nozzle, and increasing the size of the globules discharged. The same nozzle can be used, but the latter is altered somewhat. Owners of E-Z-On machines can write to the E-Z-On Corporation and obtain advice as to how the nozzle should be changed. There is no charge for this information, nor is there any cost connected with altering the nozzle.

These changes mean that now there is no loss of mortar, as was formerly encountered, and the operator finds the application of the scratch coat to metal lath very simple.

So, no longer is the application of plaster by machine a dream—it is a very definite reality!

now hear this!

Dear Mr. Small: Last September, I cut from the *Chicago Construction News* a clipping which reported on your talk of the preceding day before the Producers Council. This talk stressed the need for a better presentation of the merits of those products on which a manufacturer is seeking inclusion in an Architect's specifications. At that time, I did not have your address, and I put this item to one side, intending to write you very shortly. This clipping turned up today.

One of the most pressing needs in present construction is a more general knowledge of the causes and methods of prevention of condensation in the newer types of construction.

Having observed, over the past 25 years, that the changes in construction and tenancy have occasioned a large number of blistered roofs in this area, I wrote a treatise back in 1950. The first two pages outline the causes of condensation on roof areas, methods of correction, and a warning against the use of a positive vapor barrier on an uninsulated roof. The third page specifies the material and its application.

I have called on practically every Architect and most of the Consulting Engineers in this area, and have discussed the problems of condensation from both a technical and a practical angle with a high percentage of my contacts.

Although I encounter many Architects who are suffering from this problem, not over 2% of my contacts will pay the few cents necessary to achieve the desired results.

As an example, on a recent plant construction in the Chicago Area, the Architect included our J-98 Vapor Barrier Membrane in his specification as an alternate to a 15# felt. The tenancy of the construction would entail a fairly high humidity (45% at 72°) on over 60,000 square feet of roof deck. Figures disclosed the fact that an extra $1400 would be involved.

The contracts for roofing have been let. The roof construction will be identical with an adjoining building belonging to the same client. Roof blisters occupy at least 30% of the entire roof area of the present building. (Cost of the new construction, $850,000: added cost of proper roof construction, .00165% of the total cost, or about 3% of the cost of the roof.) If these percentages will influence Architects' decisions, am I not casting my pearls before swine in an effort to educate them?

The material called for in this specification protects over 20,000 railroad cars against a two-way movement of Vapor, has controlled vapor in paper plants where 160°-65% R.H. is indicated, controls vapor movement in half a dozen Decalcomania Plants in Chicago where 75°-75% R.H. is ordinary year round and on many other types of construction.

Yet, many Architects and Engineers specify asphalted papers as vapor barriers to save 1¢, 2¢, or 3¢ per foot. Is it an insult to your intelligence to say that "Any product put into suspension with a volatile will pass water vapor through the pores which are left by the evaporation of the volatile"?

The reactions of Architects and Engineers vary materially with the size of the office. A large office, with a specification writer, usually gives a good hearing and gets results. The reception in the smaller offices is consistent in its variations. If the Architect has a commission or two and is working on the drawings himself, he is "more important" than George B. Post, Harry Ives, Cobb, James Gamble Rogers, or Albert Kahn—and is often discourteous as well. On the other hand, if he has no job on the boards and never will design a job large enough to use your product, he will detain a busy salesman far beyond the merits of the call.

My firm designs, engineers, and fabricates special insulation products for industry, and we have recently entered the building field. A call upon the Chief Engineer for Standard Oil, Lever Brothers, Pacific Flush Tank Co., Chicago Bridge and Iron Co., and United States Steel Co. always gets me an audience. I have had as many as five Architects tell me in one day, "I'm too busy." Frankly, it is my belief that the average Architect does not wish to listen to a presentation which might upset his fixed trends of thought. If you have any reason to feel otherwise, I would appreciate your reasoning.

In the meantime, if you have any problem involving insulation, it is usually good business for both of us if you will consult Universal Fabricated Products Company. JOHN A. BOLAND, JR.

Universal Fabricated Products Co.

Any comments?

drafting room efficiency-3:

by Hans W. Meier*

Several years ago P/A conducted a survey to determine how successful offices which were accomplishing good work had solved organizational problems.

Thomas Creighton wrote (*November 1948 P/A*) ". . . all of the successful offices agree on certain things. First of course, that some method of operating efficiently and consistently is needed. Second, that all employees must be given a feeling of contributing to a complete design process, with some degree of responsibility, rather than being cogs in a mechanical wheel. Third, that discussions, group decisions, and cooperation must be fused into whatever method of producing the work is decided on."

How have these successful offices achieved their increased efficiency? How have they effected a sense of participation in the project among their personnel? How have they been able to translate talk and ideas into drawings and buildings? The largest part of the answer seems to lie in the caliber of production teams they have built and in the offices' abilities to mold a strong morale and loyalty among the teams' members.

One capable man who identifies himself personally with the success of the job is worth a dozen men who have been made to feel that their contributions are next to worthless. A technique these firms use is to select their team members carefully so as to get people they can trust—and then go ahead and trust them!

picking the right man

It isn't easy to pick the right man for the job; normal turnover of drafting room personnel testifies to that. But turnover is expensive, both in morale among those remaining and in actual dollars lost in advertising for new people, in interviewing applicants, choosing the replacement, and training him in the way you want the job done. The possibility of turnover begins with hiring and the best way to reduce it is by choosing the team's members very carefully.

What do we look for in an applicant: on what abilities can we predict his success on the job? If you ask 50 people what a good draftsman is, you are apt to get many different answers. Yet there is a fairly general agreement that a desirable applicant should have: (1) experience in the particular type of construction he will be dealing with; (2) the required skill in drafting and lettering; (3) inherent pride, initiative, and imagination in his work which will be reflected in his contribution to the total job.

Industry relies more and more heavily on "testing" of applicants in advance through tests scientifically designed to find out how much of the required abilities the applicant has. Of course, to do this you have to know just what abilities are required; you have to know exactly what you are looking for. There has been little done to date in developing tests for the selection of drafting room personnel, but there eventually will be exploration in this field. In the meantime, we must rely on our own perception of the needs and ask ourselves: "Can we expect this applicant to deliver the quality of work we want; will he work well with the other people on the crew; can we give him the type of work with which he will be happy and willing to stay with us; is this the man to whom we can trust that part of the job, or will we constantly have to watch over his shoulder for fear he will make a bad mistake?"

If we are going to free our executives from trivial detail, we must divide the labor and the responsibility among people we can trust and then we must go ahead—and trust them. An efficient operation requires that each man do a prescribed part of the work, a part for which he presumably has special abilities. In this manner have been built some very successful production teams. Their method of operating is to choose the man carefully, see that he has a complete picture of what they want done, and then let *him* do it.

drafting room organization

Few offices stop to write down the basic principles of their organization. Among many offices, however, the following are found to be accepted in one wording or another:

1. Top management should be free of burdensome detail.
2. Authority should be delegated to the lowest practicable organizational level.
3. Over-elaborate organizations should be avoided.
4. No person should report to more than one supervisor.

Quite a few other offices would add:

5. Responsibilities of all members of the organization should be clearly defined.
6. Responsibility should be matched with commensurate authority to act.

These last two points seem to be very provocative. Although there is no disagreement about their value, responsibilities are often confused in their disposition. *A* may think that *B* is responsible and *B* may think that *A* is responsible while, all the time, the responsibility actually rested in *C*! In determining how far to go with a decision, in knowing *where* to go *for* a decision, in knowing which of two contradictory orders to follow, in these and many other instances it is valuable to have a clearly defined list of responsibilities of each member of the organization.

One reason cited for the lack of this definition is that it is a time-consuming process and that the only people who could approve the outlay for it do not consider the results sufficiently valuable. This is a strange paradox since, ordinarily, the approval needed would be that of top management, which stands to lose the most by confusion of responsibility.

Yet responsibilities can generally be defined quite easily. The example shown here served the purpose on a multimillion-

* *Chief draftsman for Benedict, Beckler & Kocher, Architects-Engineers, Downey, Calif.; Member, Industrial Relations Alumni Association.*

dollar Navy project involving a drafting room budget of over $20,000. This simple memorandum established the responsibilities for 165 man-weeks of work. And on that particular job there was a minimum of confusion and an extremely high rate of production.

drafting room morale

Morale is not so easy to obtain as good organization. Drafting room morale is like marriage—you have to keep working at it if you want it to succeed. It is a subtle, fragile thing so hard to grow and so easy to destroy.

A hard-hitting drafting room crew can acquire a tremendous loyalty to the firm and with that loyalty and their own hard work forge a reputation (and gain a profit) on the jobs they do. When people feel that they and their work are respected for a vital contribution to the completed project, they are inclined to give the very best they've got to the job. When they trust their firm and are confident of their future with the firm, they tend to work for the firm's success, as well as the completion of the job at hand.

But let a single injustice go unchallenged in the drafting room and you may find a different story. Let one unwise supervisor try dictatorial or domineering methods and some top-notch personnel may start looking for different jobs. Allow questionable layoffs without notice and the confidence of every man in the drafting room drops to a new low. Try to substitute exploitation and deceit for participation and truth and see how long it takes to get production back up to the standard you had before.

There are drafting rooms where morale is always high. Generally, in these firms good fortune or premeditated design have put operations on a sort of Golden Rule basis. Some people are "just that way by nature" and they don't have to think much about what is the right thing to do in a situation. Instinctively, they treat employes and colleagues, alike, with genuine respect and courtesy. In so doing, they seem to inspire an almost fanatical loyalty to themselves and their organizations.

In other drafting rooms we have to work at morale and remain alert to the things which could damage it. We know by the records of industry that high morale and high productivity go hand in hand. We know that turnover is costly and should be avoided. Developing our skills in keeping morale high while getting the job out on schedule is a large order—but it's worth the results.

Typical memorandum defining responsibilities on a large drafting project.

INTER-OFFICE CORRESPONDENCE

NEW YORK OFFICE

Memorandum

Date October 18, 1953

From: S. K. Boyd *To:* Drafting Room

Subject: Navy #423, Assignment of Work

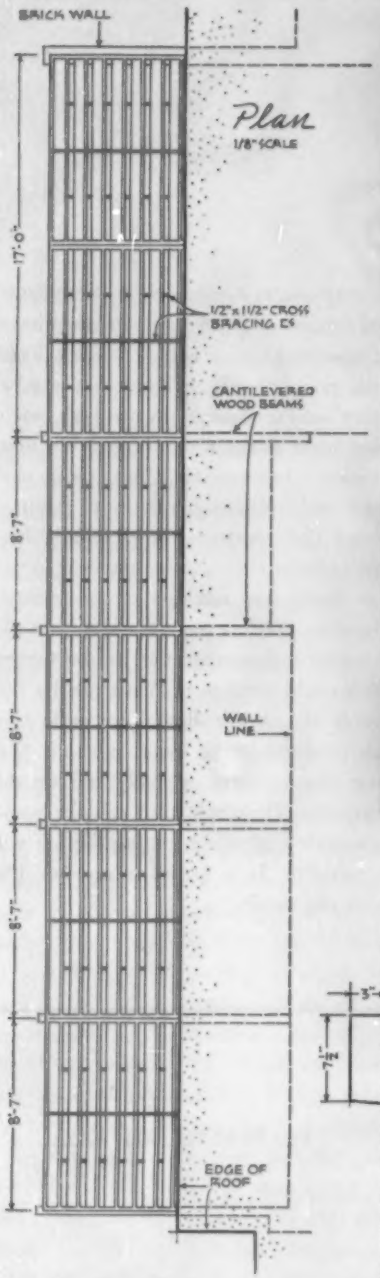
1. Bill Meier is assigned to this project as Project Captain. He will be responsible to the Project Director for the time schedule and for over-all co-ordination of all architectural, structural, civil, mechanical, and electrical drawings and specifications of the project at the working level.

2. Del Summers is assigned to this project as Project Engineer. He will be responsible to the Chief Engineer for the time schedule of the Engineering Departments and for the co-ordination of structural, civil, mechanical, and electrical drawings and specifications.

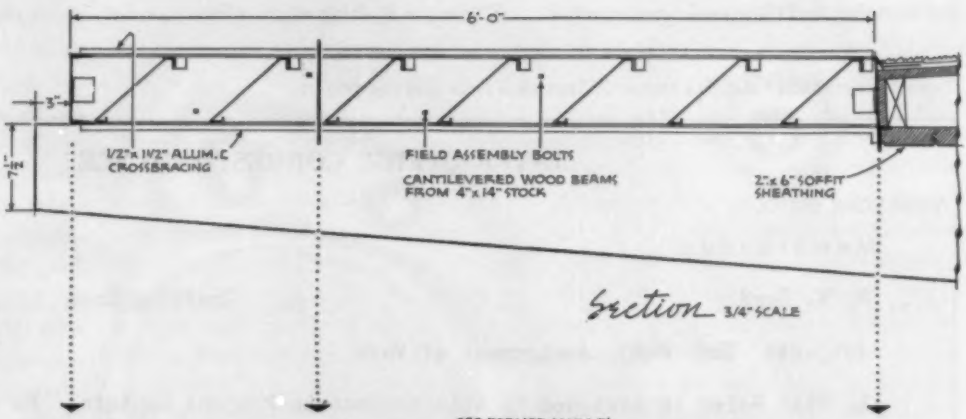
3. The quality of work, its accuracy and completeness, will be the specific responsibility of the department heads. These responsibilities have been delegated, for the project, as follows:

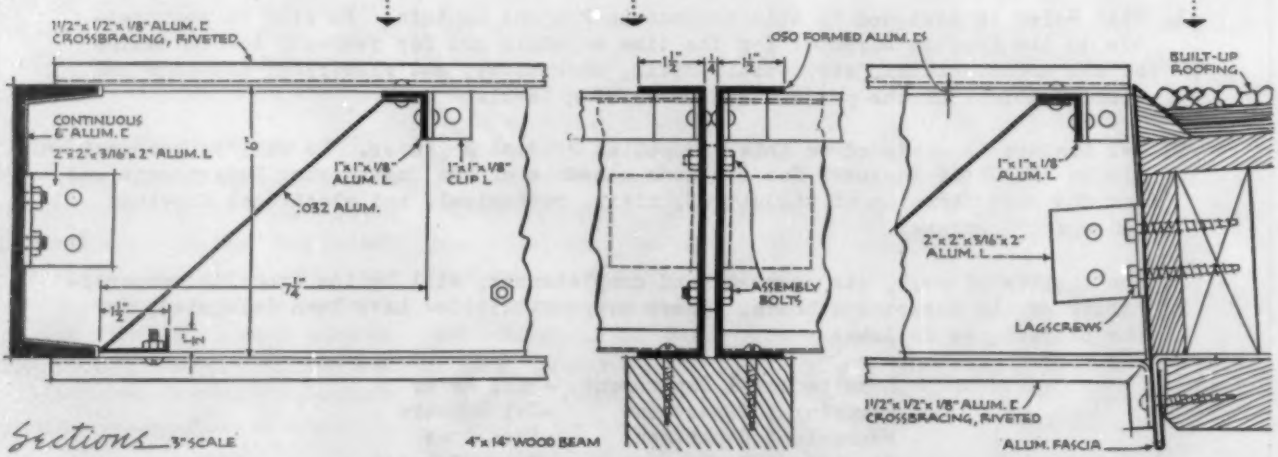
Architectural Department	-Bill Meier
Structural Department	-Del Summers
Mechanical Department	-Ivan Oras
Electrical Department	-Perry Sampson
Civil Department	-Ed Rothschild

sun hood



JULIUS SHULMAN

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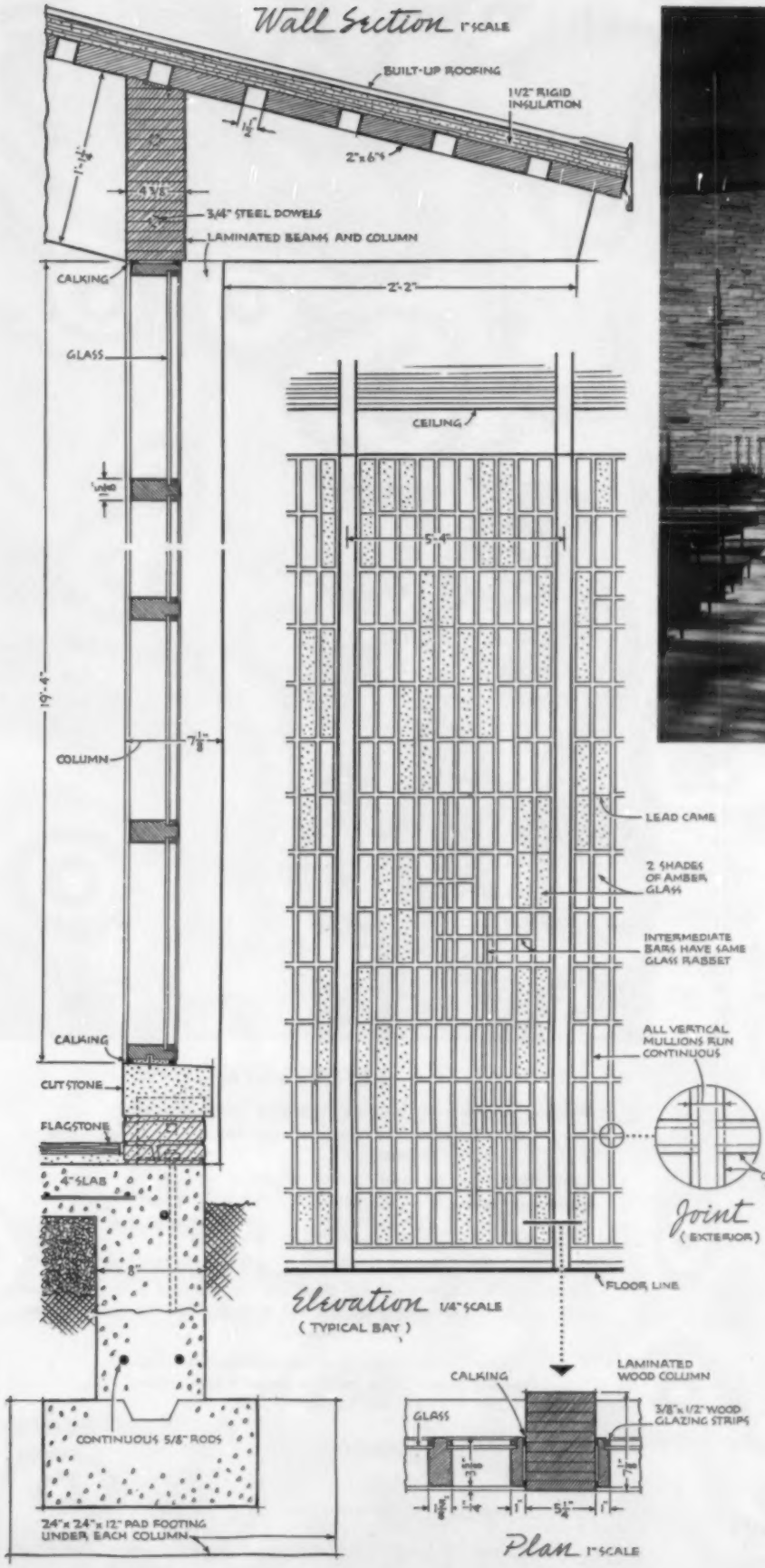
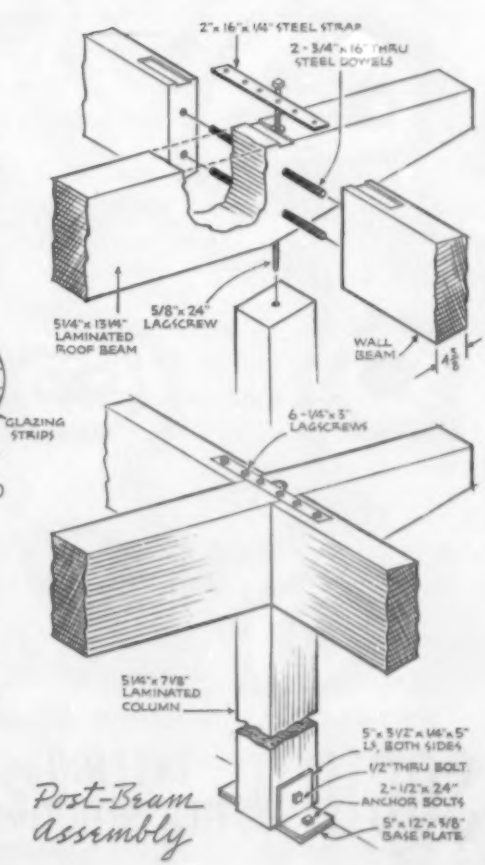
2" x 2" x 3/16" x 2" ALUM. L
LAGSCREWS
1 1/2" x 1/2" x 1/8" ALUM. L CROSSBRACING, RIVETED
ALUM. FASCIA
Sections 3" SCALE
4" x 14" WOOD BEAM

BUSINESS EDUCATION BUILDING, Costa Mesa, Calif.
Richard J. Neutra & Robert E. Alexander, Architects

glazed wall

REYNOLDS, PHOTOGRAPHY INC.




2"x 16"x 1/4" STEEL STRAP
2 - 3/4"x 16" THRU STEEL DOWELS
5 1/4"x 13 1/4" LAMINATED ROOF BEAM
5/8"x 24" LAGSCREW
WALL BEAM
6 - 1/4"x 3" LAGSCREWS
5 1/4"x 7 1/8" LAMINATED COLUMN
5"x 3 1/2"x 1/4"x 5" LP, BOTH SIDES
1/2" THRU BOLT
2 - 1/2"x 24" ANCHOR BOLTS
5"x 12"x 5/8" BASE PLATE
Post-Beam assembly

CHAPEL, Fort Collins, Colo.
James M. Hunter, Architect

Door and Panels of Patterned Glass

CREATE A *DRAMATIC* ENTRANCE

Matching panels and door of beautiful glass make this interior an impressive office suite.

The Blue Ridge *Securit** Interior Glass Door is the key point of interest.

It's decorative! Being neutral in tone, the translucent door harmonizes with every décor, giving a fresh, clean, modern appearance. Handsome hardware comes in your choice of bronze or chrome finish.

It's functional! The glass panels and *Securit* Door lend an air of spaciousness to smaller rooms . . . "borrow" light from one area for another, yet provide adequate privacy.

It's practical! Because it's heat tempered, this door can take hard usage. Installation is simple and there's never a worry about refinishing or repainting. All hardware comes with the door, ready for quick assembly.

Your L·O·F Distributor or Dealer will be glad to give you all the facts. Look for his name in the phone book yellow pages under "Glass". **

BRIEF DATA

Glass—⅜" thick. Muralex patterned on both surfaces.

Tempered—three to five times stronger than untempered glass of same thickness.

Reversible—can be used right or left hand.

Standard Sizes—

2'6" x 6'8"	2' 5 1⁵⁄₁₆" x 6' 7⅛"
2'8" x 6'8"	2' 7 1⁵⁄₁₆" x 6' 7⅛"
3'0" x 6'8"	2'11 1⁵⁄₁₆" x 6' 7⅛"
3'0" x 7'0"	2'11 1⁵⁄₁₆" x 6'11⅛"

Closers—when specified, the door can be shipped with a Sargent closer or prepared for use with an LCN concealed closer.

For more complete information, see the Securit Door insert in Sweet's Architectural File.

securit® INTERIOR GLASS DOORS

Made by **BLUE RIDGE GLASS CORP.**

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608 Madison Ave., Toledo 3, Ohio

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ADDRESS_____

CITY_____ ZONE____ STATE_____

Louise Sloane

dormitory rooms

Housing for resident students, whether at college or at preparatory school level, has relatively fixed problems. From the owner's viewpoint, materials must be chosen for their ability to take strong punishment, as well as for their adaptability to a strict budget. From the student's viewpoint, there are the three S's to be considered—Sleep, Study, Storage—plus a fourth desirable, Sunshine.

That interiors which meet these demands need not necessarily be coldly monastic is demonstrated in the four dormitory rooms chosen for these pages. Color, texture, and interplay of surface materials remove the institutional chill. Built-in furnishings free floor space for an open look in even the smallest rooms. Tackboards bridge the gap between the student's irresistible need to personalize walls and the owner's legitimate concern for property damage.

In the Mount Hermon boys' dormitory, Architect Britton designed built-in storage, dressers, desks, and bunk beds. Painted cinder-block walls contrast with natural redwood storage units. Acoustical-tile ceilings and asphalt-tile floors contribute to study quiet.

At Mount Holyoke dormitory, Architect Orr provided ample storage for the girls' rooms by introducing the wardrobe system (an early use of such an idea, as the building planning started in 1946). Color was carefully chosen with regard to orientation, and room colors were coordinated with corridors, doors, sash, and bucks. Note dressing-table section in wardrobe unit, complete with lighted mirror cabinet and cosmetic shelves.

At Trinity College, Designer James of O'Connor & Kilham, created ingenious built-in units for storage and for sleeping. Double bunks are equipped with storage drawers, ladders, reading lights. Small-luggage storage is provided for in wardrobes. Concrete-block walls are painted for contrast with natural woods and asphalt-tile flooring.

Architect Breuer's Vassar dormitory combines built-ins with portable furniture, bright colors, and contrasting fabrics to create a homelike interior. In the double rooms, a 7-foot-high partition divides sleeping from study area, provides closet and dressing-table space on one side and work space on the other.

dormitory rooms

client	Mt. Hermon School for Boys
location	Mt. Hermon, Massachusetts
building	J. Willard Hayden Dormitory
architect	James A. Britton

Joseph W. Molitor

data

Design Theory: Functional design, straightforward use of materials. Requisites—durability for hard usage by students; omission of expensive materials.

Color Plan: Naturals and neutrals.

cabinetwork

Built-in Units: exposed surfaces, natural redwood/ Rugg Lumber Co., Greenfield, Mass.

doors

Doors: flush/ maple/ solid core.

equipment

Sprinkler System: Rockwood Sprinkler Co., 141 Milk St., Boston, Mass.

lighting

Flush Units: Holophane Co., Inc., 342 Madison Ave., New York, N. Y.

walls, ceiling, flooring

Partitions: cinder block/ painted.

Ceiling: "Acousti-Celotex"/ acoustical tile/ Celotex Corporation, 120 S. LaSalle St., Chicago 3, Ill.

Flooring: asphalt tile/ Kentile, Inc., 58 Second Ave., Brooklyn, N. Y.; rubber cove base/ The B. F. Goodrich Company, Flooring Division, Watertown 72, Mass.

client	Mount Holyoke College
location	South Hadley, Massachusetts
building	Lakeside Dormitory
architect	Douglas Orr

Joseph W. Molitor

data

Design Theory: Adoption of wardrobe system cut separating partitions to a simple installation, saved over-all length in structure. Interior design was kept to utmost simplicity architecturally, relying on form and color for effect.

Color Plan: All west side bedrooms—warm gray, blue-green, gray-green, chartreuse; all east side bedrooms—Caenstone, Peach Buff, yellow. Sash and bucks inside bedrooms, limestone gray.

cabinetwork

Built-In Units: Scott & Duncan Co., 504 Dudley St., Roxbury, Mass.

doors and windows

Flush Wood Doors: Roddis Lumber & Veneer Co., Holyoke, Mass.

Metal Door Frames: E. H. Friedrick Co., Holyoke, Mass.

Door Louvers: The Airolite Co., Marietta, Ohio.

Windows: Hope's Windows, Inc., 84 Hopkins Ave., Jamestown, N. Y.

lighting

Spun-Brass Receptacles in Ceilings: Charles Parker Co., Hanover St., Meriden, Conn.

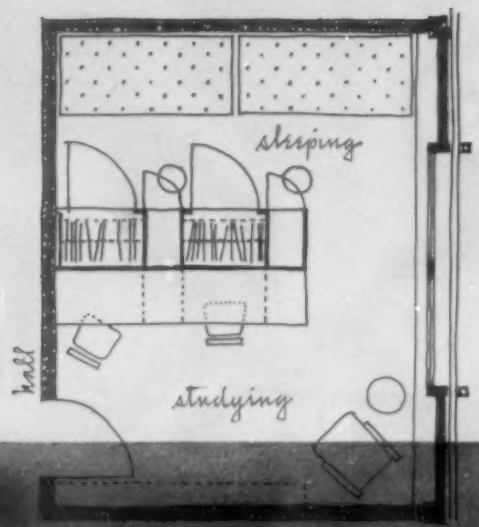
walls, ceiling

All Walls: hard-finish plaster/ painted.

Ceiling: concrete-slab soffit/ rubbed and painted.

dormitory rooms

client	Vassar College
location	Poughkeepsie, New York
building	Cooperative Dormitory
architect	Marcel Breuer



study area in double room

Photos: Joseph W. Molitor

view into sleeping area in double room

single room

data

Design Theory: Separation of study and sleeping areas in double rooms. Rooms designed for privacy, sunlight, quiet.

Color Plan: All floors, brown. Pale gray walls with blue curtains, or blue walls with beige curtains. Rust chairs. Natural wood tones.

cabinetwork

Cabinet Partition, Desks Attached, Storage Units: natural birch, masonite/ architect-designed.

furnishings and fabrics

Desk Chairs: Thonet Bros., Inc., One Park Ave., New York, N. Y.; Herman Miller Furniture Co., Zeeland, Mich.

Lounge Chairs: Knoll Associates, Inc., 575 Madison Ave., New York 22, N. Y.

Fabrics: Knoll Associates, Inc.

Beds, Pillows: William Intner Co., 344 E. 40 St., New York, N. Y.

Scatter Rugs: William Gold, Inc., 19 E. 53 St., New York, N. Y.

walls, ceiling, flooring

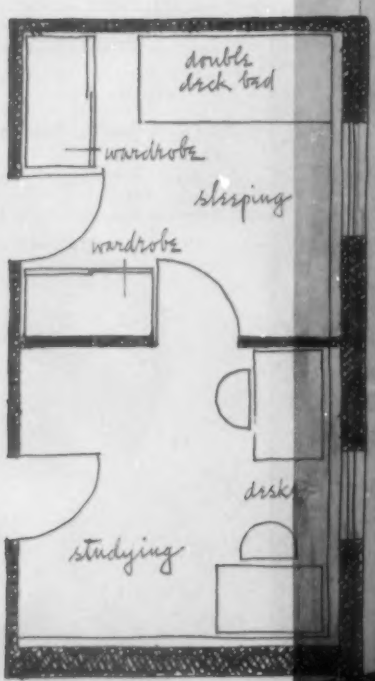
Walls: painted.

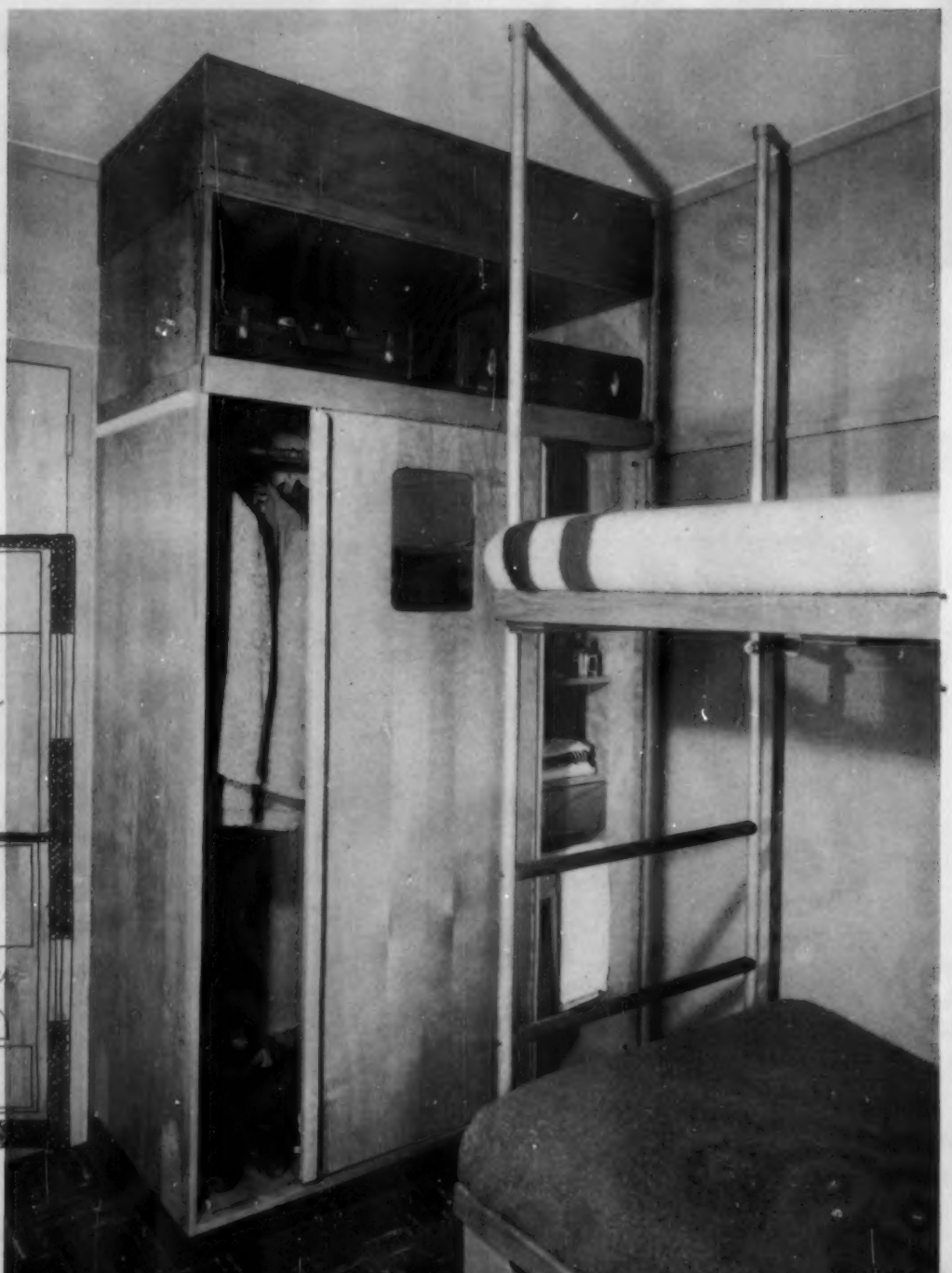
Ceiling: "Travacoustic" tile/ Gold Bond/ National Gypsum Co., 325 Delaware Ave., Buffalo 5, N. Y.

Floors: plain heavy-gage linoleum/ Armstrong Cork Co., Lancaster, Pa.

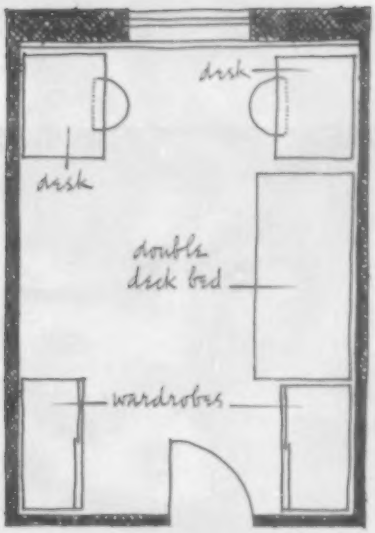
dormitory rooms

client	Trinity College
location	Hartford, Connecticut
building	Freshman Dormitory
architects	R. B. O'Connor & W. H. Kilham, Jr.
furniture-equipment designer	Stewart Ross James
color designer	Teresa Kilham





two-room suite, separate study room



combined study-sleep

Photos: Ben Schnall

data

Design Theory: All furniture and equipment built-in wherever possible, both to prevent loss and to conserve space. Double-deck bunks permit housing 137 students in 52 double rooms, 6 suites.

Color Plan: Asphalt-tile colors and paint colors vary in blocks throughout building.

cabinetwork

Wardrobes, Trunk Racks (in corridors): made to architect's specifications/ executed by Frank B. Curry Co., 560 Harrison Ave., Boston, Mass.

doors and windows

Doors and Wood Sash: flush/ birch/ installed by C. H. Dresser & Son, Hartford, Conn.

Window Shades: "Temlite"/ waxed basswood/ Holland Shade Co., 999 Third Ave., New York 22, N. Y.

furnishings

Desks: Security Steel Equipment Corp., Avenel, N. J.; Steelcase Co., Grand Rapids, Mich.

Chairs: Thonet Bros., Inc., One Park Ave., New York, N. Y.

Double-Deck Bunks: anodized aluminum verticals/ rubber-coated step bars/ birch headboards and blanket bins/ birch doors as mattress supports/ architect-designed/ executed by Frank B. Curry Co.

lighting

Bed Reading Light: Swivelier Co., 43 34 St., Brooklyn 32, N. Y.

p/a interior design products

Kitchen Cabinets: (left) "Convertible" storage space through interchangeable sliding shelves and drawers/ snap-lock assembly, telescoping sub-bases/white baked-enamel cabinet surfaces/ stainless-steel-and-colored-plastic handles/ sub-bases neutral gray/Micarta counter tops/ cast-iron sinks; (above) sliding wire shelves in utility cabinet permit operation of appliances directly from shelves/ **American Radiator & Standard Sanitary Corp., Bessemer Bldg., Pittsburgh 22, Pa.**

Buffet Kitchen: "Dwyer 400"/ includes refrigerator, electric cooking top, storage cupboard, sink/ push-button door controls, automatic worktop light, keyed lock/ counterbalanced top for fingertip opening or closing/ finishes in mahogany or blonde/ depth: 21⅞"; length: 48"; height (closed): 42½", (open): 61½"/ **retail: $495/ Dwyer Products Corporation, Calumet Ave., Michigan City, Ind.**

Built-In Kitchen: (above) "Tap'n Wall"/ built-in electric oven, surface cooking units/ optional griddle/ oven serviceability without removal from installed position/ **The Tappan Stove Co., Mansfield, Ohio.**

Wall Refrigerator Freezer: (below) mounted on 5-ft "picture-hook" bracket/ in white, yellow, green, pink, blue, brown/ 39½" high, 64" wide, 17½" deep/total capacity 10.7 cu ft/ **General Electric Co., 310 W. Liberty, Louisville, Ky.**

Design for a school corridor and stair well by Marsh, Smith & Powell, Architects.

"Clay Tile Meets All Tests: Quality, Permanence & Design."

MARSH, SMITH & POWELL
per HP

West Coast architects Marsh, Smith & Powell found clay tile a good collaborator to work with in their design for a modern school corridor with stair well. This rendering shows how clay tile performs a permanent double service of function and design.

The important check points: low-upkeep tile floors to take generations of student traffic—glazed tile walls that keep maintenance down and good appearances up for decades—tile treads and risers which absorb footsteps unmarred for years, and ceramic mosaics on the corridor columns which offer a striking treatment that is maintenance-free.

When you approach your next school project, keep clay tile in mind. It's the ideal high traffic, low maintenance floor covering. It gives you and your clients a permanent solution for easily-cleaned, decorative walls that never need replacement. And it is flexible enough to give you unique, custom designs with standard units.

So be sure to check today's range of clay tile colors, shapes and types—the widest of any modern building material. When it is a clay tile installation, it never fades, burns, stains, scratches or needs refinishing or redecorating —all the cost is figured in at the start!

The Modern Style is

GENUINE CLAY
tile

TILE COUNCIL OF AMERICA, Room 3401, 10 East 40th St., N.Y. 16, N.Y. or Room 433, 727 W. 7th St., Los Angeles, Calif.

PARTICIPATING COMPANIES: American Encaustic Tiling Co. • Architectural Tiling Co., Inc. • Atlantic Tile Mfg. Co. B. Mifflin Hood Co. • Cambridge Tile Mfg. Co. • Carlyle Tile Co. • General Tile Co. • Gladding, McBean & Co. • Jordan Tile Mfg. Co. Mosaic Tile Company • Murray Tile Co., Inc. • National Tile & Mfg. Co. • Olean Tile Co. • Pomona Tile Mfg. Co. • Robertson Mfg. Co. Royal Tile Manufacturing Co. • Sparta Ceramic Co. • Summitville Tiles, Inc. • United States Quarry Tile Co. • Winburn Tile Mfg. Co.

How to Conserve School Budgets with Multiple Heating Units

Packaged gas-fired units provide low-cost, zoned comfort with forced warm air heat.

1. unit room conditioner

The conditioner, sitting on a plenum, is located along an outside wall and backed up to a partition wall. Warm air is discharged from the top outlet grille across the outside wall and windows. Fresh air and recirculation air enters through the floor plenum.

This is a very inexpensive application. If desired, ducts can be extended into adjoining classroom and both rooms heated by one unit.

2. enclosed room conditioner

A deluxe type of installation with the same design features as one above. A ventilated closet completely encloses the conditioner. Combustion air is ducted into closet from outside. This concealed tamper-proof installation is extremely quiet in operation.

3. overhead room conditioner

A Janitrol Horizontal Conditioner is suspended from the ceiling. Warm air is directed parallel to outside walls and across glass areas. A built-in centrifugal blower provides quiet air circulation. This unit is also approved for installation with duct system.

This particular unit requires no floor space and is installed without duct work. Capacities available from 65,000 to 150,000 Btu/hr. inputs.

4. suspended heaters

Small, economical propeller-type heaters are installed overhead in this gymnasium. The small amount of propeller fan noise is not a factor here. An ideal system for intermittent occupancy areas, where installation cost is of prime importance. During unoccupied periods, minimum temperatures can be maintained automatically . . . an advantage common to all these models.

5. central forced warm air system

A heavy duty, forced warm air furnace distributes heat from a central furnace room through a duct system. In larger schools, remote rooms occupied intermittently, and less economically heated by a central system, may be efficiently handled by individual room units.

A central-type system of proven success. Temperature control can be zoned for different activity areas. Furnaces are factory assembled and tested . . . 250,000 to 1,750,000 Btu/hr. input capacities.

MORE INFORMATION?

These are just a few of the successful installations on file at Janitrol. If you would like additional ideas on low cost installations of Counter-flow Conditioners in perimeter heating systems, or specifications, please write. There's no obligation.

Janitrol

Janitrol Heating & Air Conditioning Division
Surface Combustion Corporation, Columbus 16, Ohio
In Canada: Alvar Simpson Ltd., Toronto 15

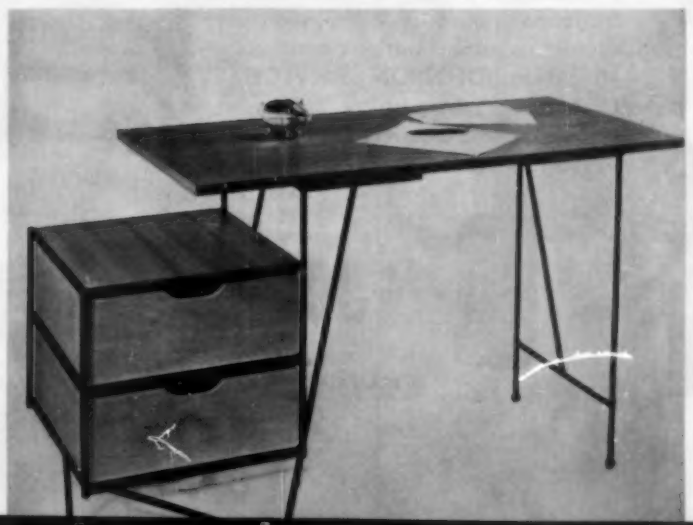
ALSO MAKERS OF *Surface* INDUSTRIAL FURNACES AND *Kathabar* HUMIDITY CONDITIONING

p/a interior design products

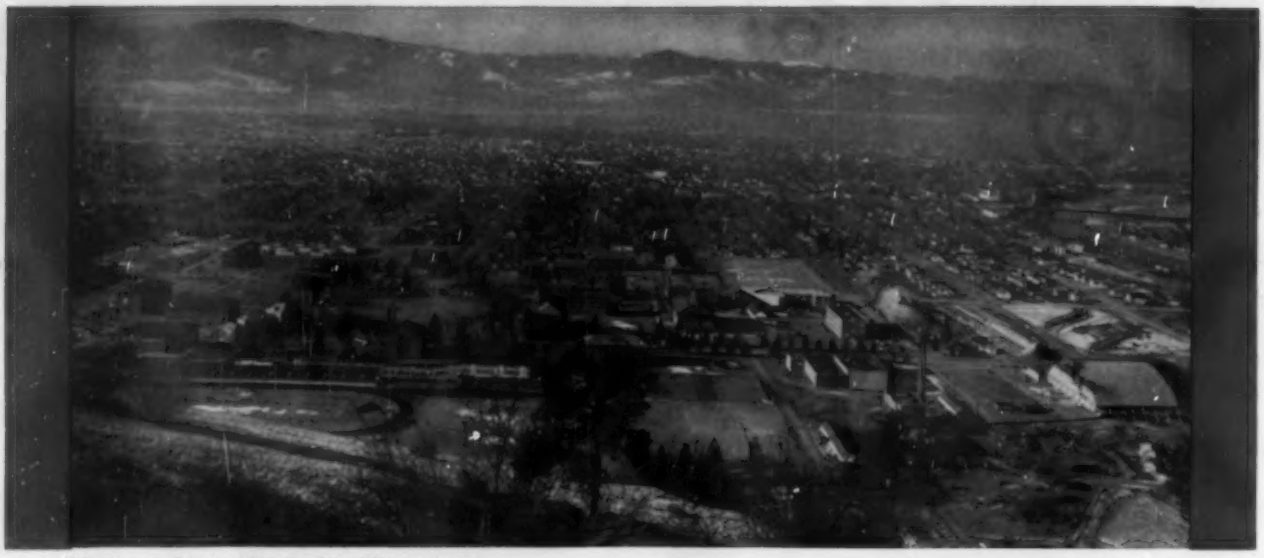
Arm-Chair: (left) "Swan" chair, #18RI/ steam-bent white ash, wrought iron, and transparent-rawhide lacing/ wood in clear natural, walnut, or black finish/ 18½" wide, 17" deep, 18" high/ **retail:** $35/ **Vermont Tubbs, Inc., Wallingford, Vt.**

Lounge Chair: "Classic Contemporary"/ foam rubber over Elasticweb/ frame walnut or satin-finish brass or pewter-finish nickel/ designed by Milo Baughman/ **retail:** $170/ **Arch Gordon Co., Inc., 1335 N. Wells St., Chicago, Ill.**

Desk: blackmetal frame and supports/ wood surfaces in mahogany, oil-and-wax finish/ **retail:** $49.50; in birch, natural or tawny finish/ **retail:** $58.50; with plastic top/ **retail:** $56.50 in mahogany, or $61 in birch/ **Vista Furniture Co., 1040 N. Olive St., Anaheim, Calif.**



Reading Table: "Trend Color Line"/ apronless top for maximum leg space/ cocoa-brown Permaseal-finish top/ legs natural birch/ for Yale University Divinity School Library/ chairs by Norman Cherner/ **Library Bureau of Remington Rand, 315 Fourth Ave., New York 10, N. Y.**



Montana State University, Missoula

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Liberal Arts Building

Music Building

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Johnson, the originator of temperature control for educational buildings, has a vast fund of over 70 years' "know-how" to help solve any temperature or air conditioning control problem . . . with unequalled engineering excellence and greatest economy.

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Business Administration

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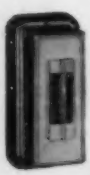

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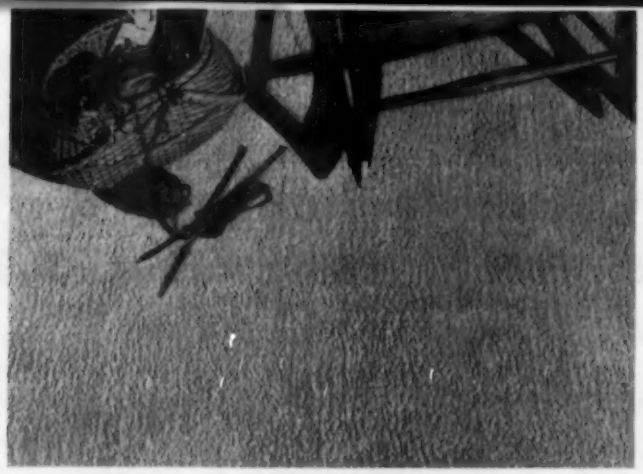
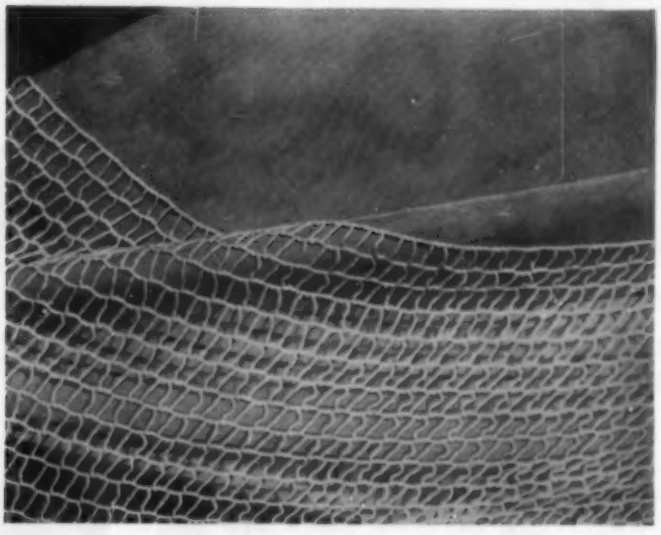


Tufted Carpet: "Champion"/ 90% Tufton rayon, 10% nylon yarn/ high cut-pile/ 9', 12', 15' widths/ in Aqua, Sandalwood, Caribou Beige, Jade Green, gold, Woodrose, Champagne Beige, Nutria, rose, gray/ Permalock back/ Resistsoil treated to retard soiling, eliminate fluffing/ **retail:** $6.95 sq yd/ **Gulistan Carpet, A. & M. Karagheusian, Inc., 295 Fifth Ave., New York 16, N. Y.**



Decorative Fabrics: (background) close-weave upholstery, nylon warp, Dynel fill/ in blue, green, Pumpkin, beige/ **retail:** $8.50 yd; (foreground) fishnet, all-Dynel/ pale-gold only/ **retail:** $5.50 yd/ **Marie Nichols Fabrics, 300 E. 61 St., New York, N. Y.**

Diffuser-Dome Ceiling Fixture: semi-rigid washable white vinyl/ pan of white baked enamel, 22" diameter/ hardware 4" satin-chrome disk and finial/ maximum wattage 3-100 w./ no-screw mounting, center support disk holds diffuser tightly against ceiling/ disk tilts to change bulbs/ **retail:** $20.95/ **Lam Workshop, Inc., Wakefield, Mass.**

Adjustable Lamps: (left) floor lamp/ vacuumatic clutch device in stem permits height to adjust from 42" to 66"/ Swedish brass/ shade 13", white Silkan Vinyl/ 3-way socket/ **retail:** $52.50; (above) table lamp/ adjusts from 21" to 28" in height/ shade 8"/ **retail:** $34.50/ designed by John Gartman/ **Laurel Lamp Co., 235 Fifth Ave., New York, N. Y.**

Sinclair Oil's New Chicago Headquarters —Completely Sound Conditioned with Acousti-Celotex Tile

Sinclair Oil Building, 155 North Wacker Drive, Chicago
Owner: John W. Galbreath & Co., Inc.
Architect: Holabird & Root & Burgee
Builder: Turner Construction Company
Acoustical Contractor: James L. Lyon Co.

Lighting and air conditioning also included in integrated* system

John W. Galbreath & Co., Inc. has gone all-out for employee efficiency and comfort in this outstanding new Chicago office building. Throughout the 200,000 square feet of the building, Acousti-Celotex Mineral Tile traps machine clatter and voice chatter, reduces routine noise in general and private offices and corridors. For the Sinclair Oil Company and other tenants, this means that errors will be reduced, over-time lessened, productivity increased.

Low in Cost—Easily Maintained—Acousti-Celotex Tile provides economical sound-conditioning. No special maintenance is required. Beauty and cleanliness add to the advantages of highly effective sound-absorption. Acousti-Celotex Tile can be washed *repeatedly*, painted *repeatedly* without loss of sound absorbing efficiency.

*Acousti-Celotex incombustible Perforated Mineral Tile is installed on the Celotex Acousti-Line® Metal Suspension Ceiling, where Tile, light fixtures and air diffusers become interchangeable parts of the ceiling. When a new layout is desired, units can be quickly relocated . . . economically!

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FOR FULL DETAILS on the complete line of Acousti-Celotex products, please write to The Celotex Corporation, Dept. C-75 120 S. La Salle Street, Chicago 3, Illinois.

THE CELOTEX CORPORATION, 120 S. LA SALLE ST., CHICAGO 3, ILLINOIS. IN CANADA: DOMINION SOUND EQUIPMENTS, LTD., MONTREAL, QUEBEC

Residential Hardware: "Black Rose" design/ combines regular finishes of brass, bronze, or aluminum "Weslocks" with black rosettes/ matching cabinet hardware with black backplates/ **Western Lock Mfg. Co., 211 N. Madison Ave., Los Angeles 4, Calif.**

Lighting Unit: flush, recessed, fluorescent unit with dropped Plexiglas diffuser/ removable pan, independent of housing, contains all wiring connections for repair access with minimum of dis-assembly/ takes two 20- or 40-watt lamps/ 25¾" x 8½" x 4"/ instant start/ UL-approved/ Model #22/ **Atlas Electric Products Co., 315 Ten Eyck St., Brooklyn 6, N. Y.**

Wall Covering: "Velvetex"/ vinyl plastic fused to fine-count cotton, printed in vinyl inks/ waterproof, soilproof, colorfast/ does not crack, chip, scratch/ fire resistant, treated to prevent mold and mildew/ may be scoured with strong soap/ patterns and textures in 104 colorways/ designed by James Seeman/ **Velveray Corporation, 15 W. 34 St., New York 1, N. Y.**

Kitchen Cabinet Specification Sheet: Architect's Specification Sheet on steel kitchen cabinets/ lists minimum standards, provides guide to basic strength and rigidity of steel kitchen cabinets/ copies may be obtained by writing to: **Steel Kitchen Cabinet Mfrs. Assn., 1008 Engineers Bldg., Cleveland 14, Ohio.**

Bathroom Unit: "Vanitory"/ flexible construction to enclose washbowls and plumbing fixtures, provide surface and storage as required/ custom-fabricated of Formica to fit any floor or wall condition/ washbowls range from 14"x16" up, in white or pastels/ Formica in satin, furniture, or polished finish, wide range of Raymond Loewy-designed colors and patterns/ **The Formica Company, 4620 Spring Grove Ave., Cincinnati 32, Ohio.**

Roll-Out Refrigerator-Freezer: caster-equipped, movable/ toe-lever lock/ 11.3 cu ft refrigerator capacity/ 123 lb food freezer at bottom/ eye-height fresh-food compartment/ **Hotpoint Co., 5600 W. Taylor St., Chicago 44, Ill.**

Six-Unit Cooking Top: "L & H Custom Bilt" cooking top with six fast-heating surface units, four at 1250 watts, two at 2100 watts each/ in stainless steel or eight porcelain enamel colors/ controlled by 7-position heat switches for wide range of cooking temperatures/ indicator switch-light/ 3⅝" deep, 45" long, 21¾" wide/ **A. J. Lindemann & Hoverson Co., Norris-Thermador Corp., 5215 S. Boyle Ave., Los Angeles 58, Calif.**

Colored Washfountains: vitreous enameled washfountains now available in Sun Tan, Pastel Yellow, Sky Blue, Forest Green, Sea Green, Stainless White/ heavy-duty stock/ bowls of one-piece pressings of deep-drawing steel/ pedestal panels finished in high-temperature, acid-resisting synthetic enamel in colors harmonizing with bowls/ scuff bases in gray hammer finish/ **Bradley Washfountain Co., 2203 W. Michigan St., Milwaukee 1, Wis.**

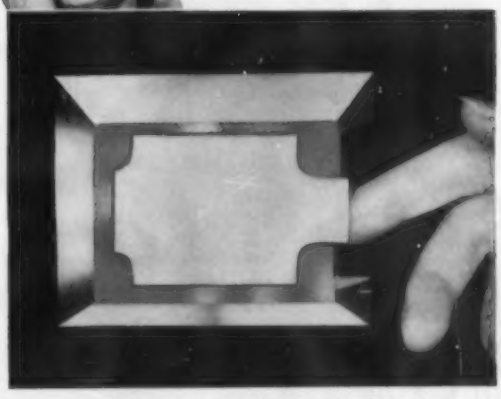
Soil Retardant: "Ludox" colloidal silica, anti-soil solution/ colorless, odorless, nonflammable/ applied to pile fabrics, such as rugs, carpets, upholstery textiles, to reduce soil/ **E. I. du Pont de Nemours & Co., Wilmington, Del.**

Visual Education Blind: provides darkness control for movies, slides, opaque projection/ controls sun and glare in normal use/ tenoned slats fit into built-in metal molding, triangular light control shields, mounted vertically, force slats tightly together to eliminate all light/ chain-operated/ slats removable for washing/ metal molding prevents blowing and banging/ installed within window frames free of heating and ventilating units/ **Mackin Venetian Blind Co., Momence, Ill.**

Venetian Blind Cord-Lock and Tiltor: "crash-proof" cord-lock/ safety device that locks blind firmly in place as soon as pressure is released from pull-cord/ "non-slip" barrel-type tiltor prevents slipping, keeps cords even and equal/ **The Eastern Venetian Blind Co., Baltimore, Md.**

WOW!

what a wonderful new idea!



(eliminates old-fashioned door knobs)

THE AMAZING

SOSS LEV-R LATCH

A revolutionary new concept in Door Hardware

NEW MODERN DESIGN

Now! For the very first time, here's a door latch with flush, smooth, streamlined surfaces that are in keeping with modern architecture. It has no knobs to damage walls—a feature which eliminates the need for door stops.

NEW EASE OF INSTALLATION

To install a Soss Lev-R-Latch all that's necessary is to bore two holes and insert four screws. This can be done so easily and so quickly that labor costs are cut as much as ½.

NEW EASE OF OPERATION

With the Soss Lev-R-Latch you open a door with but a flick of a finger. There's no more pesky knob that's either too tight or too loose, or is forever punching holes in the wall.

MECHANICAL AND DESIGN PATENTS PENDING

AVAILABLE WITH OR WITHOUT LOCKING MECHANISM FOR ALL INTERIOR DOORS!

Low in Cost—High in Quality

Soss Lev-R-Latch is a fitting companion to the world-famous Soss Invisible Hinge, "The Hinge That Hides Itself."

The Soss Hinge has no protruding hinge butt. It's completely hidden from view when doors or lids are closed. Use it whenever you build or remodel.

SOSS Manufacturing Company
P. O. Box 38, Harper Station
Dept. 13 Detroit 13, Michigan

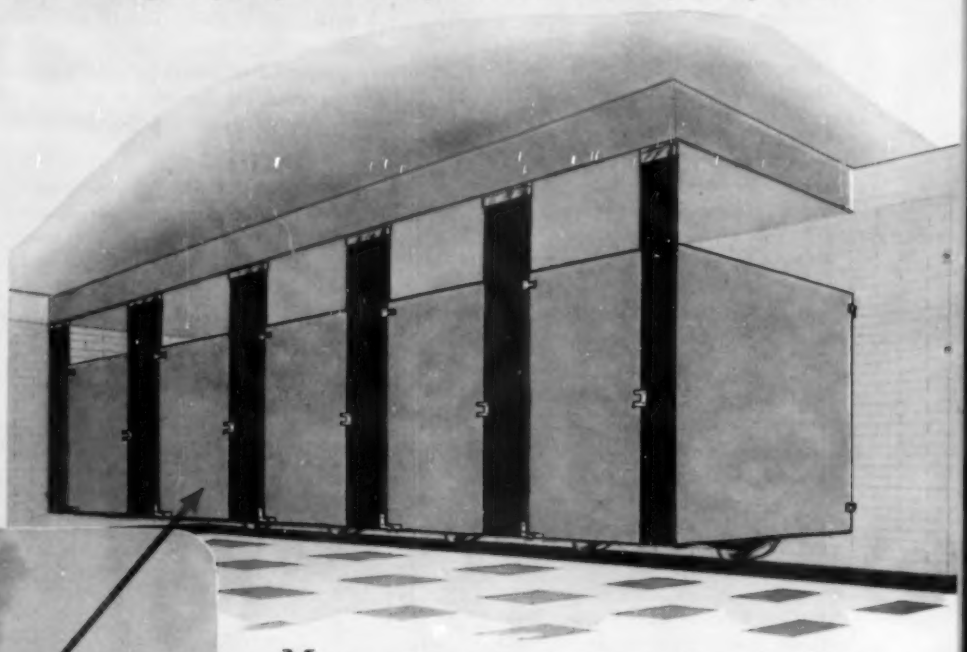
No. 2
OF A SERIES

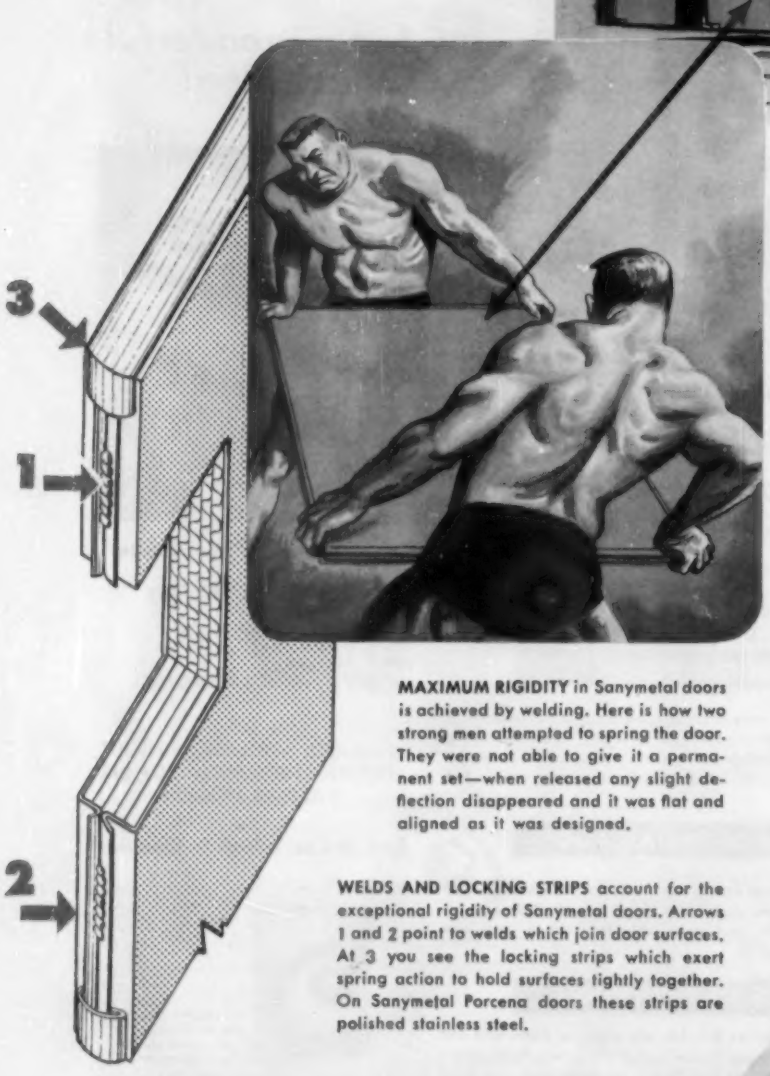
WHAT TO LOOK FOR IN QUALITY TOILET COMPARTMENT CONSTRUCTION

One of many major differences that give you your money's worth in satisfactory service!

Doors WELDED so rigid...

THAT WRESTLERS CAN'T SPRING THEM!





MAXIMUM RIGIDITY in Sanymetal doors is achieved by welding. Here is how two strong men attempted to spring the door. They were not able to give it a permanent set—when released any slight deflection disappeared and it was flat and aligned as it was designed.

WELDS AND LOCKING STRIPS account for the exceptional rigidity of Sanymetal doors. Arrows 1 and 2 point to welds which join door surfaces. At 3 you see the locking strips which exert spring action to hold surfaces tightly together. On Sanymetal Porcena doors these strips are polished stainless steel.

MANY quality construction features found in *all* Sanymetal Toilet Compartments mean longer satisfactory service. These features result from Sanymetal's 41 years' experience manufacturing compartments. Be sure you get this quality.

A feature you should notice is *rigidity* produced by *welding* at the edges to join the compartment door surfaces. This makes the door a rigid structural unit. The edges are then further reinforced and the door made stronger with a formed locking strip welded, ground and finished at the corners. Strong men cannot intentionally spring this door without use of heavy tools, an abuse more severe than extremely heavy service.

Welded, rigid doors are one of many special features you get at no extra cost on all Sanymetal Toilet Compartments. Ask your Sanymetal Representative about all these features available as standard from Sanymetal at no extra cost.

See Sweet's or send for Catalog 92, describing all Sanymetal Compartments. If you wish, we will mail other advertisements of this series on quality construction details.

This long-life feature is **STANDARD** *at no extra cost on all types of Sanymetal Compartments.*

THE Sanymetal®
PRODUCTS COMPANY, INC.
1683 URBANA ROAD, CLEVELAND 12, OHIO

p/a manufacturers' literature

Editors' Note: Items starred are particularly noteworthy, due to immediate and widespread interest in their contents, to the conciseness and clarity with which information is presented, to announcement of a new, important product, or to some other factor which makes them especially valuable.

air and temperature control

1-35. Trade-Wind Ventilators, AIA 30-D-1, 26-p. notebook enclosing material on home ventilators. Photos, drawings, and descriptions indicate selection of proper ventilator for kitchens or bathrooms. Explains operation and installation of blowers for venting inside rooms; brochure gives technical data and specifications. Trade-Wind Motorfans, Inc., 7755 Paramount Blvd., Rivera, Calif.

1-36. Anemostat Selection Manual, AIA 30-J (50), 68-p. guide containing information on selection of aspirating-type air diffusers. Outlines procedure for design and installation of diffuser system; provides data on radius of diffusion, sound levels, static pressure, and performance. Also covers selection of diffusers for high-velocity air-conditioning systems. Description, dimensions, and performance chart for each model; drawings, specifications. Anemostat Corp. of America, 10 E. 39 St., New York 16, N. Y.

1-37. Bros Type-S Boilers (WT-8), 8-p. brochure illustrating boiler designed for efficient, economical operation in limited space. Describes construction features; gives drawings and physical data on boilers burning coal, oil, or gas. Power Div., Wm. Bros Boiler & Mfg. Co., 1057 Tenth Ave., S. E., Minneapolis 14, Minn.

★ **1-38. Connor Kno-Draft High-Pressure Air Diffusers** (K33), 52-p. manual compiled to provide up-to-date information on design of high-pressure air-transmission systems. Discusses design procedure, single- and dual-duct systems, air velocity, and duct construction; describes high-pressure diffusers in detail, including selection tables, dimensions, and specifications for each model. Photos, layout drawings. Connor Engineering Corp., Danbury, Conn.

1-39. Slant-Fin Radiators and Enclosures, AIA 30-C-4 (505), 20-p. booklet describing finned-pipe radiators which induce natural convection. Gives data on square-finned units as well as more efficient slant-finned series; contains information on sloping top, flat-top, expanded-metal, and baseboard enclosures. Also provides rating tables, engineering notes, and architect's specifications on radiators. Slant-Fin Radiator Corp., 87-49 130 St., Richmond Hill 18, N. Y.

1-40. Trion Mechanical Air Filters, AIA 30-D-3 (M-10), 12-p. publication on filters for use where low initial cost outweighs high efficiency; where dirt load is unusually heavy; and where careful air cleaning is not necessary. Explains features of filter design; describes several fixed-panel and traveling-curtain filters. Contains design data and physical properties for all models; drawings, specifications. Trion, Inc., McKees Rocks, Pa.

1-41. Webster Custom Walvector Radiation (B-1553A), 8-p. pamphlet describing perimeter-heating units with enclosures custom-made to suit building requirements. Contains information on eight basic enclosure types; gives data on optional accessories. Also includes tables for selection of proper-size radiator unit; specifications, dimensions, drawings. Warren Webster & Co., Camden 5, N. J.

construction

2-46. Characteristics of Modern Woods (4th Ed.), 68-p. guide containing complete index and description of woods in use today. Gives characteristics, uses, and comparative-cost data for foreign as well as domestic woods; tabulates properties of most common U. S. woods. Also includes glossary of terms used in veneer industry. Roddis Plywood Corp., Marshfield, Wis.

2-47. Electrified Concrete-Joist Floors, AIA 31-C-62, 16-p. publication on reinforced-concrete joist floors with grid-like network of steel electrical conduits embedded in structure—eliminating need for fill. Details and drawings show how steel ducts are formed in concrete; design-data section contains instructions for layout of conduit system. Also gives notes on fire rating, cost comparison with cellular-steel floors, and specifications. Concrete Reinforcing Inst., 38 S. Dearborn St., Chicago 3, Ill.

2-48. Curtain Walls, 16-p.

2-49. Commercial Aluminum Windows, 40-p.

2-50. Alumi-Coustic Grid System, 8-p.

★ Three brochures detailing aluminum building products. First booklet illustrates curtain-wall system with photos, elevations, and details of recent noteworthy installations. Second booklet contains large-size, two-color details of commercial windows; drawings, dimensions, and specifications are given for double-hung, projected, or ribbon windows. Third one provides data on exposed-grid suspension system for acoustical ceilings. Specifications are included as well as suggestions for arrangement of lighting and ceiling tiles. Cupples Products Corp., 2650 S. Hanley Rd., St. Louis 17, Mo.

2-51. Mills Metal Partitions, AIA 35-H-6 (55-T), 20-p. bulletin showing steel partitions for toilets, showers, and hospital compartments. Gives description, specifications, and suggested layouts for several different types of partitions. Includes sample color chips and description of surface finishes; drawings. Mills Metal Compartment Co., 965 Wayside Rd., Cleveland, Ohio.

2-52. Nelson Stud Anchors for Concrete, 14-p.

2-53. The Curtain-Wall Story, AIA 17-A, 22-p.
Two pamphlets containing information on use of stud welding in construction. First one provides data on welding of concrete anchors. Gives properties and dimensions of steel stud anchors; shows details of anchors used at expansion joints, door frame, and curbs. Second one describes erection of metal curtain walls with

(Continued on page 145)

PROGRESSIVE ARCHITECTURE, 430 Park Avenue, New York 22, N. Y.

I should like a copy of each piece of Manufacturers' Literature circled. We request students to send their inquiries directly to the manufacturers.

1-35	2-47	2-55	4-26
1-36	2-48	2-56	4-27
1-37	2-49	3-35	4-28
1-38	2-50	3-36	6-12
1-39	2-51	3-37	6-13
1-40	2-52	3-38	7-11
1-41	2-53	3-39	7-12
2-46	2-54	4-25	9-12

please print

Name

Position

Firm

Mailing Address ☐ *Business* ☐ *Home*

City *State*

Coupon must be used by 9/1/55.

Saks Fifth Avenue in San Francisco has an atmosphere all its own. So does every department in the store. Four Carrier Zoning Weathermakers* meet the variations in heat load, keep comfort constant from foyer to fitting rooms.

Edward Malley Company in New Haven, Conn., cools four floors and a basement with 27 self-contained Carrier Weathermakers*. Units are located in storage spaces off the selling floor, require only a small amount of ductwork.

Kline's West, Carrier-equipped department store in St. Louis, has a unique air duct system. Conditioned air comes from "trees"—ceiling-suspended, tree-like lighting troughs centrally located over main floor and mezzanine.

Carrier is the quickest way to the right answer

JUST 1–2 AND THE JOB IS THROUGH!

Carrier has all the ways to air condition any job—and all Carrier equipment is engineered to the same uniform standard. So short-cut hours of selection by (1) using the Carrier line as your shopping guide and then (2) comparing values. Get in touch with your Carrier dealer or distributor. He's listed in the Classified Telephone Directory. Or write to us directly. Carrier Corporation, Syracuse, New York. *Reg. U.S. Pat. Off.

Carrier air conditioning · refrigeration · industrial heating

stud welding. Lists types of wall panels suitable for welding; provides drawings showing placement of studs. Nelson Stud Welding Div., Gregory Industries, Inc., Lorain, Ohio.

2-54. Sanymetal Suspended Ceilings, AIA 39-B-1 (NSP-7), 8-p. bulletin illustrating three different types of suspended-ceiling systems. Details show installation of channels and application of ceiling material; includes data on utility mailing channel for lightweight-ceiling construction. Photos, drawings, specifications. Suspended Ceilings Div., The Sanymetal Products Co., Inc., 1701 Urbana Rd., Cleveland 12, Ohio.

2-55. Teco Products and Services (55), 12-p. brochure containing information on timber connectors, shear plates, and framing anchors. Gives data on how and where to use each product for efficient, economical construction; provides drawings, dimensions, and specifications. Also includes listing of timber-roof truss fabricators. Timber Engineering Co., 1319 18 St., N. W., Washington 6, D. C.

2-56. Systems of Lightweight Construction, AIA 3-D-3 (G-66), 16-p. booklet outlining uses of vermiculite products in lightweight construction. Lists features of vermiculite aggregate; details many different constructions utilizing vermiculite plaster or concrete. Gives U-factors in addition to fire ratings of assemblies; specifications. Zonolite Co., 135 S. LaSalle St., Chicago 3, Ill.

doors and windows

3-35. Washington Hardware (332), 24-p. publication on cabinet and rolling-door hardware. Contains drawings, dimensions, and description of cabinet hardware; gives data on tracks, hangars, and guides for rolling doors. Also includes information on special equipment for custom-designed kitchens. Washington Steel Products, Inc., Tacoma 2, Wash.

3-36. Grant Sliding Door Hardware, 58-p. loose-leaf notebook containing information on line of hardware for sliding doors. Includes material on equipment for very-thin plywood, accordion-folding, and heavy-duty doors; describes operation of sheave-and-track hardware. Cut-away photos show installation of hardware; technical data, drawings, specifications. Grant Pulley and Hardware Corp., 31-85 Whitestone Pky., Flushing 54, N. Y.

3-37. Kawneer Store Fronts, AIA 26-D (55), 20-p. brochure on aluminum sash and moldings designed for store-front installations. Sections and cut-away drawings show 10 different sash styles; details illustrate corner bars, division bars, and show-case doors. Also gives information on interchangeable aluminum moldings; specifications. The Kawneer Co., Niles, Mich.

3-38. Quality Builders Hardware (10), 40-p. booklet showing line of builders' hardware. Covers door pulls, push plates, sliding-door locks, and cabinet pulls; gives drawings as well as description of each piece of hardware. Quality Hardware Mfg. Co., 762 E. Slauson Ave., Los Angeles 21, Calif.

(Continued from page 143)

3-39. Dor-O-Matic Door Controls, AIA 27-B (S-55), 8-p. folder describing invisible, automatic door operator. Explains operation of unit recessed in floor; provides data on models for single- or double-door installations. Also includes information on manual door operator concealed in floor. Drawings, dimensions, specifications. Dor-O-Matic Div., Republic Industries, Inc., 4446 N. Knox Ave., Chicago 30, Ill.

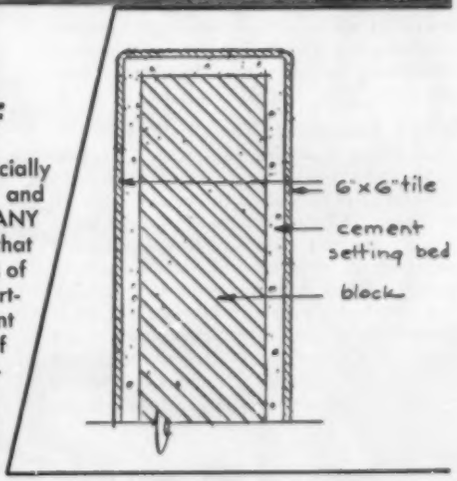
electrical equipment, lighting

4-25. Better Seeing Builds Better Sales, 12-p. bulletin covering general aspects of lighting for food stores. Recommends kind of illumination to be used for special purposes, types of fixtures best for store lighting, and color of lamp to compliment different foods. Also contains data on lighting of store windows, store fronts, and

(Continued on page 146)

MAR PROOF AND AGE PROOF

In stair wells and corridors, especially in schools, the tough clay body and high fired glazed surface of ROMANY Tile will readily withstand abuses that would permanently scar materials of lesser resistance. Whether inadvertent or intentional, rough treatment will not affect color or finish of ROMANY Tile. And age itself induces no change in this sturdy tile, for ROMANY maintains its structural strength and its attractive bright colors through the years. No other wall surface can offer greater satisfaction.



Every Architect should have our Sample Tile Chart No. 15. It's free.

UNITED STATES CERAMIC TILE COMPANY

Member: Tile Council of America and Producers' Council, Inc.
217-G FOURTH ST., N.E., CANTON 2, OHIO

p/a manufacturers' literature

(Continued from page 145)

parking areas. Photos and drawings. Lighting Div., Sylvania Electric Products, Inc., Salem, Mass.

4-26. Century-Izenour Control Board, 12-p. booklet featuring all-electronic system for stage-lighting control. Explains advantages of electronic control; describes elements of system consisting of console control desk, cross-connecting panels, and tube bank. Drawings. Century Lighting, Inc., 521 W. 43 St., New York 36, N. Y.

4-27. G-E Load Center Line (GEC-1309), 12-p. publication on new line of circuit-breaker load centers for residential or light-commercial service-entrance installations. Describes advantages of load center to accommodate increased electrical loads; provides data on ratings, specifications, and wiring diagrams. Trumbull Components Dept., General Electric Co., Plainville, Conn.

4-28. Mercury Street Lighting, (B-6064), 36-p. booklet giving basic information on mercury-vapor lamps for street lighting. Contains data on performance of luminaires; describes operating characteristics of mercury-vapor systems. Also includes discussion on cost comparison with other types of systems. Circuit diagrams, performance tables. Lighting Div., Westinghouse Electric Corp., Edgewater Pk., Cleveland, Ohio.

insulation (thermal)

6-12. Fibrocel Pipe Insulation, AIA 37-D-1 (IN-155A), 8-p. pamphlet on molded-silica pipe insulation—primarily for heating, plumbing, and air-conditioning installations. Lists physical properties of material; gives table of heat-transmission coefficients with steel or copper piping. Short-form specifications, drawings. Johns-Manville, 22 E. 40 St., New York 16, N. Y.

6-13. Foamglas in Thin-Wall and Sandwich-Panel Construction, AIA 37-B (FB 102), 12-p. booklet outlining advantages of cellular-glass insulation in curtain-wall construction. Photos illustrate several noteworthy projects utilizing porcelain-enamel, aluminum, stainless-steel, and concrete panels; detail drawings show how insulating material was used; job-data list gives properties of particular installation. Also contains physical properties of insulation and typical details. Pittsburgh Corning Corp., 1 Gateway Center, Pittsburgh 22, Pa.

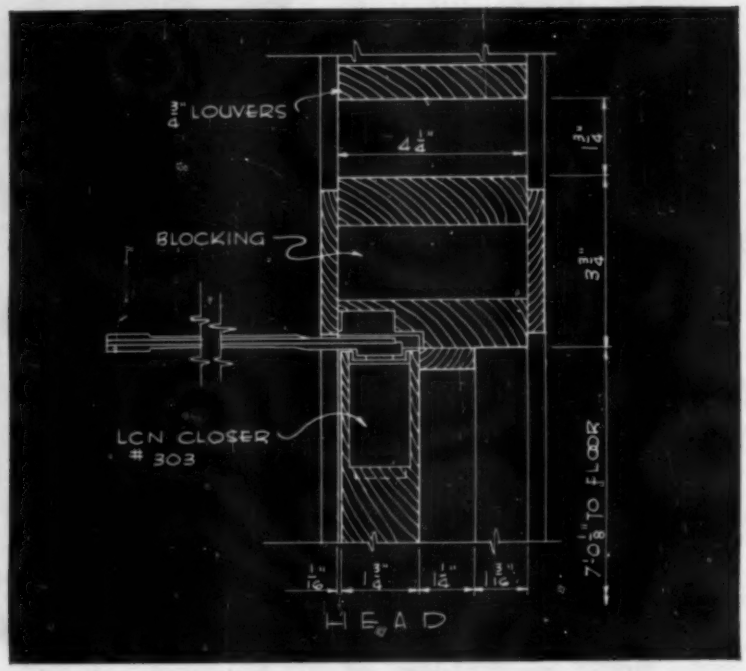
sanitation, plumbing, water supply

7-11. Flexon Expansion Joints (135), 28-p. catalog describing corrugated-steel expansion joints for installation in steam or hot-water pipe lines. Discusses features of several different types of joints; gives procedure for design of piping system with expansion joints, including examples, formulas, layouts, and selection tables. Drawings. Flexonics Corp., 1315 S. Third Ave., Maywood, Ill.

7-12. Pittsburgh-Des Moines Incineration Plants (601-55), 24-p. bulletin giving information on various types of incineration plants suitable for municipalities. Features mechanical stoking system for increased incinerator capacity; also contains data on problems of municipal refuse disposal. Photos, sectional drawings. Pittsburgh-Des Moines Steel Co., Neville Is., Pittsburgh 25, Pa.

surfacing materials

★ **9-12. Bolta-Wall Vinyl Surfacing,** AIA 28-C, file folder enclosing seven pages of data on fire-retardent vinyl surfacing material. Features actual color samples of bamboo, wood, leather, and matte-plastic textures. Also includes architect's specifications and laboratory reports on fire tests. Building Materials Div., Bolta Products Sales, Inc., Lawrence, Mass.



CONSTRUCTION DETAILS

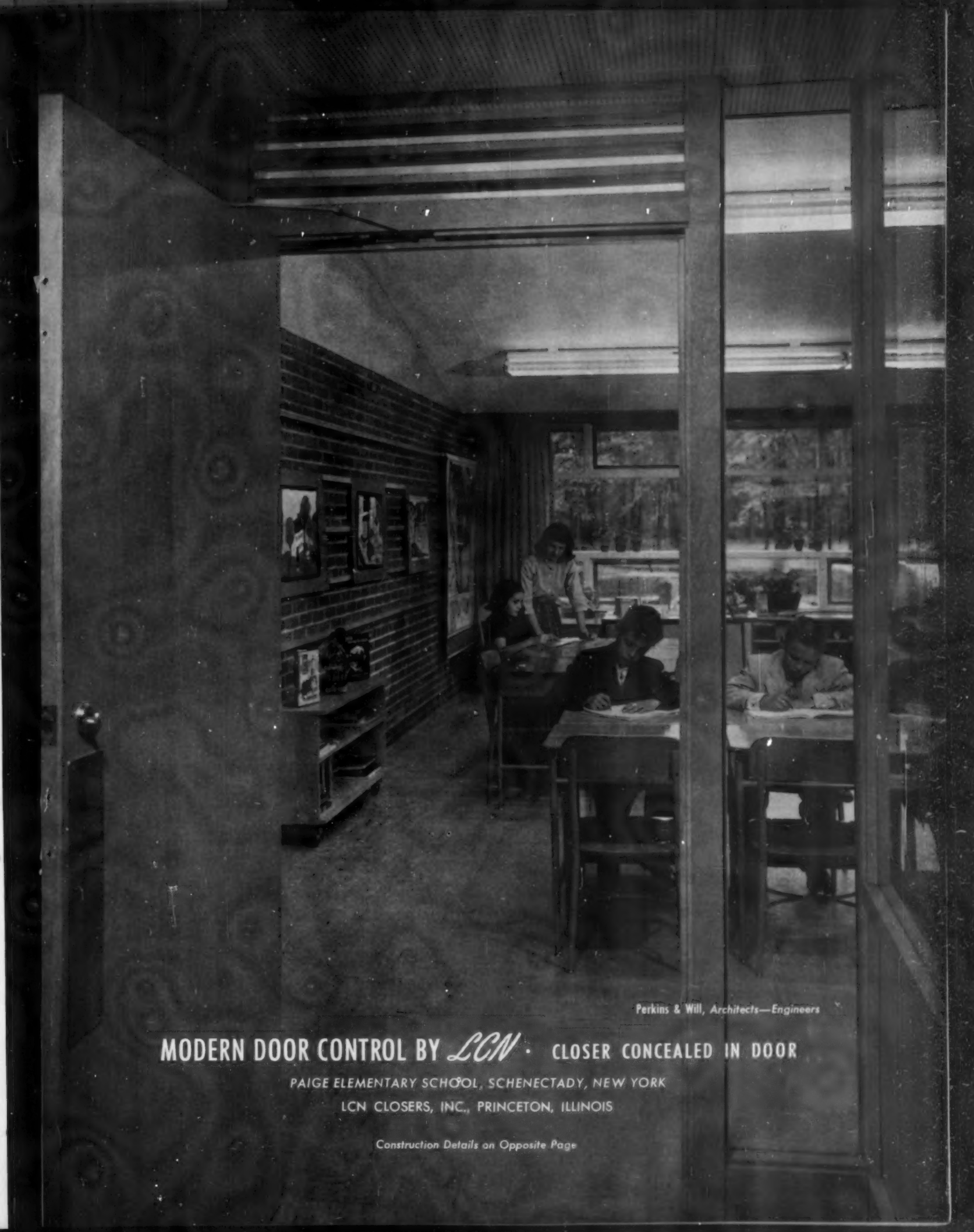
for LCN Closer Concealed-in-Door, Shown on Opposite Page

The LCN Series 302-303 Closer's Main Points:

1. An ideal closer for many interior wood doors
2. Mechanism concealed within door; flat arm not prominent, and provides high closing power
3. Door is hung on regular butts
4. Closer is simple to install and to adjust
5. Used with wood doors; wood or metal frames
6. Practically concealed control at little more than exposed closer cost

Complete Catalog on Request—No Obligation
or See Sweet's 1955, Sec. 17e/L

LCN CLOSERS, INC., PRINCETON, ILLINOIS



Perkins & Will, *Architects—Engineers*

MODERN DOOR CONTROL BY *LCN* · CLOSER CONCEALED IN DOOR

PAIGE ELEMENTARY SCHOOL, SCHENECTADY, NEW YORK

LCN CLOSERS, INC., PRINCETON, ILLINOIS

Construction Details on Opposite Page

McLouth
HIGH QUALITY
Steel

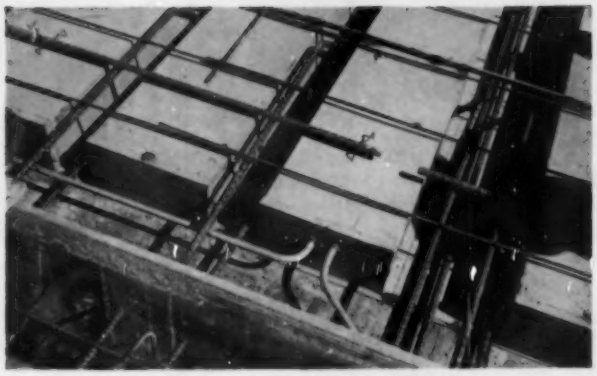
We are now operating the first Oxygen Steel Process in the United States. This dramatic new method of refining is producing high quality steel with a low nitrogen content.

The advantages of the Oxygen Steel Process are another reason why McLouth high quality sheet and strip steels will serve you better in the product you make today and the product you plan for tomorrow.

McLouth Steel Corporation

Detroit, Michigan

MANUFACTURERS OF STAINLESS AND CARBON STEELS



troffer-acoustical ceiling system

Light-gage steel panels combining the functions of pan forms, acoustical control, and fluorescent lighting troffers can be integrated with reinforced-concrete framing by using Detroit Steel's new TAC (Troffer-Acoustic) system. All panels are 24 in. wide and have been designed for long-span construction. The acoustical panels are perforated and backed-up with a noncombustible sound-absorbing material while the troffer panels provide housing for fluorescent fixtures and plastic diffusers. Reinforcing steel is laid in the panel voids as T-beam sections are formed; depths and widths are comparable with those of rib-slab or metal-pan construction. While concrete is being poured, troffer-acoustical panels require support at mid-span only, thus reducing the cost of material and labor necessary for conventional forming and shoring. Electrification through the cells of the troffers is accomplished by conduit feeders running perpendicular to the span and individual feeder lines going through the panel units. When concrete has cured, only paint, finished flooring, and fluorescent fixtures need be applied to complete the installation. Presently, TAC is being used in 23 schools in the Detroit area. Detroit Steel Products, 2250 East Grand Blvd., Detroit 26, Mich.

aluminum awning sash for window replacement

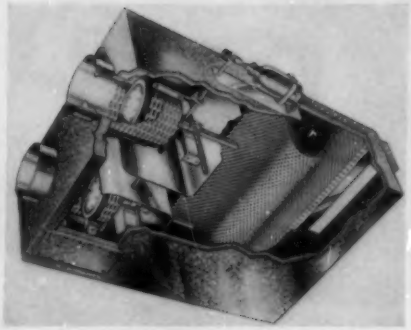
When P.S.6 of Paterson, New Jersey, was constructed (*below*), wood sash and wood muntins framing 16 lights per window were originally installed. Eventually, these windows became so deteriorated, probably due to improper maintenance, that many were inoperable and air infiltration caused almost insurmountable heating problems. Architects Lee & Hewitt, comissioned to modernize the windows and to study how they could be replaced in a minimum of time, asked the Asco Window Corp. to work with them on this problem. It was determined that with proper co-ordination the replacement could be accomplished during the Christmas holidays. School closed on December 24 and when it opened on January 10 all classrooms were ready for occupancy. Largely responsible for the savings in erection time was the adaptability of the "B" & "G" aluminum awning sash that was installed (*right*). Brown & Grist Corp., 25 Tyler Ave., Warwick, Va.

p/a products

(Continued from page 149)

air and temperature control

Dual-Duct Diffuser: temperature and volume are controlled separately in new diffuser for dual-duct high-pressure air-conditioning systems. Hot and cold air enter through separate ducts—fitted with perforated sleeve-type dampers—to sound-conditioned mixing chamber where it is blended for distribution. Thermostat-actuated motor moves both dampers simultaneously, opening one as other closes.



Felt-edged piston-type dampers regulate total air delivery, which remains constant once adjustments are made for different static pressures in each duct. Connor Engineering Corp., Danbury, Conn.

Oil-Fired Unit Heater: suspended-type unit heater is designed for permanent heating installations or for temporary use during construction. Self-contained, factory-assembled unit comes equipped with thermostat controls—requiring only vent, electric outlet, and tap to fuel supply. Heater with 140,000 Btu output uses No. 2 grade, low-cost fuel and is claimed to give 80 percent fuel-burning efficiency. Interstate Heater Mfg. Co., 2627 W. Sixth Ave., Denver, Colo.

UniTrane Air Conditioners: new room air-conditioning units are designed for year-round temperature control in multi-room buildings. Development of two-row coil, which provides as much heat-transfer capacity as four-row coil, reduces cabinet depth to 9". Units also feature low-cost installation, quiet operation, and easy-to-change filters. Available in vertical, horizontal, and concealed models; regulated by manual or automatic controls in each room. The Trane Co., La Crosse, Wis.

construction

Fenestra Movable Fire Wall: development of movable interior fire partition for industrial buildings permits rearrangement of space for changing production requirements. Light-gage steel facing panels and 4" noncombustible gypsum-board core are assembled during erection, forming 5½" fire barrier. Wall is given fire rating of 2 hr 35 min; manufactured in section 2' wide, up to 30' long. Building Panel Div., Detroit Steel Products Co., 3209 Griffin St., Detroit 11, Mich.

Expansion Joint: designed to reduce or prevent cracking of exterior stucco and acoustical-plaster ceilings, steel expansion joint also provides work stop usually required in acoustical plastering. Ground of joint, which expands or contracts with movement of plaster, relieves stresses that cause cracking. Joints are made of 26-gage galvanized steel in 10' lengths with ½" or ⅞" grounds. Penn Metal Co., Inc., 205-A E. 42 St., New York 17, N. Y.

Plastering Machine: new gun-type machine can be used to apply plaster containing half-sand aggregate as well as vermiculite or perlite aggregates. Base coats, fireproofing, and acoustical ceilings are applied more quickly and economically by machine; fine-textured plaster coats are also possible. Additional feature is that ceilings up to 14' high an be finished without scaffolding. Santa Anita Mfg. Corp., 2828 Newell St., Los Angeles 39, Calif.

doors and windows

Series 4505 Entrance Locks: new line of hardware for commercial or residential entrance doors features 5¾" round decorative escutcheon. Massive trim is held snugly against door by threaded bushing with no screws to mar design. Screwless knobs are available in round, tulip, or modern cast style, finished to match escutcheon in brass, bronze, or aluminum.

(Continued on page 152)

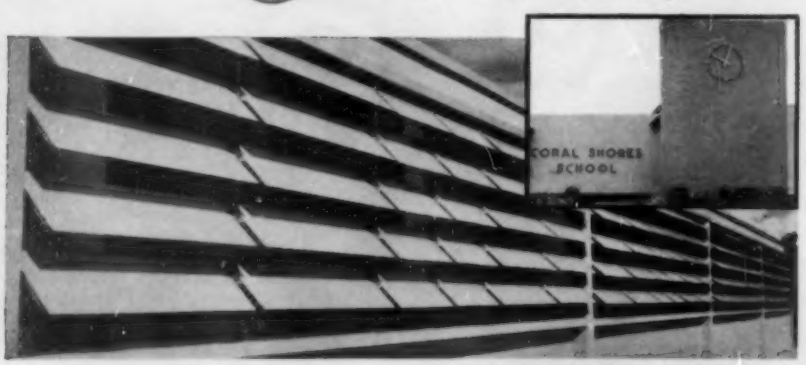
A NEW ANSWER TO A PROBLEM AS OLD AS THE SUN... **Modern Vent Solar Shades**

Solar shades in embossed aluminum and beautiful fibre glass operates from INSIDE the room.

Fingertip control of Modern Vent Louvers from inside of the schoolroom provide an easy method of controlling sun and glare. Modern Vent keeps out harmful sunrays, yet permits diffused light to enter the room.

Modern Vent is a practical, direct approach to your needs, combining sun and storm protection with distinctive design.

SUPERIOR WINDOW CO.
5300 N. W. 37th Ave., Miami, Fla.



For Complete Details, write to
SUPERIOR WINDOW CO., 5300 N. W. 37th Ave., Miami, Fla.

The PROOF of a building's age is behind these doors!

Five seconds behind these doors, and you *know* your building's age!

Notice the plumbing fixtures. If they are off-the-floor . . . your building is new forever. If not . . . it is obsolete when the doors first open.

Off-the-floor fixtures installed today will never give away the age of your buildings. Year after year, they will continue to contribute to the desireability—and marketability—of your investment. They add spaciousness. They free washrooms of litter-traps and breeding grounds for bacteria. They do away with obstacles to easy cleaning and hospital-like sanitation.

In today's major buildings, more than 800,000 such fixtures are supported on the ZURN SYSTEM®. You should look into the reasons why. You will find, among other things, that Zurn-engineered, patented features simplify installation and alignment. The entire stress is on the Zurn fitting—not on the wall. And ZURN SYSTEMS never interfere with future alterations, but often make them easier.

Buildings age fast enough. Do not give yours a running start by designing washrooms that are obsolete when the doors first open.

Before planning your next building, be sure to write for the helpful new booklet, "Behind Closed Doors." It is your guide to modern, sanitary washroom decor. 110-1

J.A. ZURN MFG. CO.

PLUMBING DIVISION

ERIE, PA., U.S.A.

The ZURN ZERO ZONE® is created by mounting off-the-floor plumbing fixtures on behind-the-wall ZURN SYSTEMS. This permits the highest degree of rest room sanitation to be attained and maintained. All major plumbing manufactures make fixtures to fit the ZURN SYSTEM.

See our catalog in Sweet's Industrial Construction File, 13a.

COPYRIGHT 1955 — J. A. ZURN MFG. CO.

this coupon brings you newest data on planning modern building entrances

REVOLVING DOOR ENTRANCE DIVISION
INTERNATIONAL STEEL COMPANY
2052 Edgar Street, Evansville 7, Indiana

Send me without obligation my personal copy of the new International "Entrance-Planning Manual":

NAME and POSITION _____

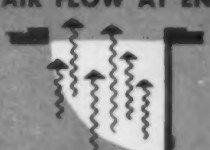
FIRM _____

ADDRESS _____

CITY _____ ZONE ____ STATE _____

HOW REVOLVING DOORS cut air conditioning costs

REVOLVING DOORS STOP AIR FLOW AT ENTRANCE



AIR RUSHES THROUGH OPENED SWING DOORS

The "Always Open — Always Closed" design of revolving doors assures a constant barrier against all but a merest trickle of outside air, even when entrance traffic is heaviest. Swing doors sweep in over 100 times as much hot, dirty, off-the-street air with each in-or-out passage!

Uncontrolled entrance of hot, humid outside air — or escape of cooled inside air — ends with the installation of a revolving door entrance. All area right up to the doors is kept uniformly cool and comfortable. Failure of cooling systems due to overloading is held to an absolute minimum. In fact, systems of less capacity can be specified . . . safely and at sizable savings . . . by including revolving doors in original building plans. And savings on *year-round* air conditioning costs average 25% or more, as proved by hundreds of tests in every part of the country! There's a host of cost-cutting facts like this in the new International Entrance-Planning Manual. Use the above coupon now!

International Revolving Door Entrance at the Hotel Statler, New York City.

See Sweet's Architectural File or classified section of your Telephone Directory

REVOLVING DOOR ENTRANCE DIVISION
2052 EDGAR ST. • EVANSVILLE 7, IND.

INTERNATIONAL STEEL COMPANY

p/a products

(Continued from page 150)

Features of backset lock are key-in-knob five-pin tumbler security, three-piece assembly, and guarded latch bolts. Sargent & Co., New Haven 9, Conn.

Stainless-Steel Locks: both trim and lock mechanism of cylindrical locks are now made entirely of stainless steel to withstand corrosion and abuse of commercial, industrial, and marine installations. Locks, manufactured in heavy-duty styles, are finished in polished or soft-brushed metal. To assure maximum strength, wrought stainless-steel trim has additional stainless reinforcement. Schlage Lock Co., 2201 Bayshore Blvd., San Francisco, Calif.

electrical equipment, lighting

Rapid-Start Ballast: new ballast for rapid-start lamps features 30 percent reduction in size and weight. In addition to savings in initial cost and ease of installation, ballast is claimed to have increased lamplight output over existing models. Unit measuring 14" x 3-3/16" x 2-9/16" weighs 13 lb. Advance Transformer Co., 2950 N. Western Ave., Chicago 18, Ill.

Ortho-88 Industrial Fixture: industrial lighting fixture is designed for mounting on channel sections in continuous runs or at spaced intervals. Channels, joined to provide open wireway of any desired length, insure alignment, exact spacing, and fixed power source for each light. Fixtures, offering 30° lateral shielding, with over-all efficiency of 83 percent, are easily moved to meet changing demands. Gibson Mfg. Co., 1919 Piedmont Circle, N. E., Atlanta, Ga.

"Luma-Ceiling": luminous ceiling is claimed to be economical in installation and maintenance. Translucent vinyl, corrugated for rigidity, is supported by extruded-aluminum channels; entire assembly, light in weight, can be suspended from ceiling or lighting fixtures. Plastic is inserted or removed from bottom and is cleaned by mild detergent. Standard fluorescent-lighting fixtures are used; spun-glass acoutical baffles are optional. Pittsburgh Reflector Co., 410 Oliver Bldg., Pittsburgh 22, Pa.

finishers and protectors

Hot-Spray Vinyl: formulated for economical and efficient corrosion control, vinyl coating protects surfaces exposed to chemical action. Applied over primer coat, film gives five-mil protective thickness; greater depths are possible in uninterrupted multiple-spray application. Prufcoat Laboratories, Inc., 50 E. 42 St., New York 17, N. Y.

insulation (thermal)

Fesco Board: new roof-deck insulation is made of expanded-perlite particles, mineral binders, and fibers. Formed in lightweight, easily cut boards, insulation is also

(Continued on page 156)

Here's one subject California and Florida agree on—

HALL-MACK®
bathroom accessories

CALIFORNIA'S BEVERLY HILTON
Newest and finest in the Conrad Hilton group, this ultra-modern structure has three wings emanating from a central service 'core.' A rare blend of good taste and striking beauty. Architect: Welton Becket, FAIA, and Associates.

FLORIDA'S FABULOUS FONTAINEBLEAU
From its formal gardens and private yacht anchorage to its superbly decorated guest rooms, this amazing Miami Beach resort hotel is a story 'spectacular' come to life. Architect: Morris Lapidus.

THE BEVERLY HILTON

THE FONTAINEBLEAU

Superlatives fall flat in describing the fabulous new Fontainebleau and Beverly Hilton hotels.
A continent apart, yet these famous hostelries share one thing in common good taste...
each is equipped with Hall-Mack Bathroom Accessories—throughout!
When modernizing, re-decorating, or building, specify Hall-Mack to give bathrooms extra sparkle and zest. Clean and simple, these gleaming chrome accessories belong in every bathroom... for solid utility and sheer beauty. Designed to blend with any decor... priced to meet any budget... Hall-Mack's sparkling bathroom accessories give this much used room a real lift.

NO. 310 · TISSUE HOLDER

NO. 338
CONCEALED LAVATORY UNIT

NO. 478
TOILET PAPER HOLDER

IF CALIFORNIA AND FLORIDA AGREE—THEY MUST BE GOOD

Sold by leading plumbing, tile & hardware dealers everywhere

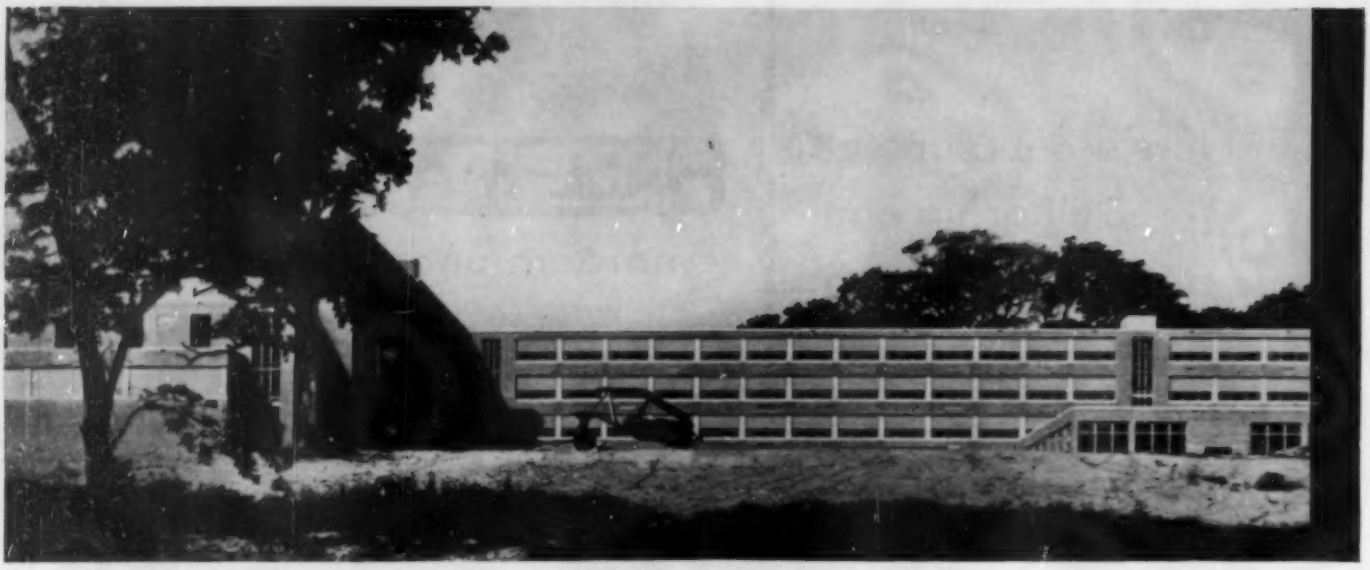
NO. 420
SOAP HOLDER

NO. 495 · TOWEL BAR

NO. P-1826 · MEDICINE CABINET

HALL-MACK COMPANY

LOS ANGELES 7, CALIFORNIA • 1380 West Washington Blvd.
CHICAGO 49, ILLINOIS • 7455 Exchange avenue
CLIFTON, NEW JERSEY • 1000 Main Avenue



Maryland — Catonsville High School, Catonsville, Md. Architect: James R. Edmunds, Jr., Baltimore, Md. Contractor: Costanza Construction Co., Baltimore.

These deluxe windows give you a lifetime finish that never needs painting...plus the strength of steel!

Pennsylvania — Darby Elementary School, Darby, Pa. Architect: Horace W. Castor, Philadelphia. Contractor: Sidney Elkman, Philadelphia.

Michigan Fairview Elementary School, Lansing, Michigan. Architect: O. J. Munson, Lansing. Contractor: Granger Brothers, Lansing.

RESULT—*the lowest lifetime maintenance costs of any windows on the market!*

Fenestra* Galvanized-Bonderized Steel Windows are made of solid bar steel sections, for the strongest possible window construction. Steel is noncombustible, and is the most fire-resistant material for windows . . . hardware never pulls off . . . steel offers ideal putty adhesion . . . no glass breakage resulting from expansion and contraction.

And all these wonderful qualities of steel are permanently preserved by an exclusive *double* protective coating. Super Hot-Dip Galvanizing alloys a thick zinc coating with the steel. This is done in Fenestra's own special plant—the only one of its kind in the world. Then a process called Bonderizing adds a nonmetallic coating over the zinc. The result is a handsome silvery-looking finish that protects the windows for life, *without painting!* And the cost of this modern, durable finish is as little as the cost of two inside-outside field coats of paint. Imagine the year-after-year savings in painting costs alone!

*®

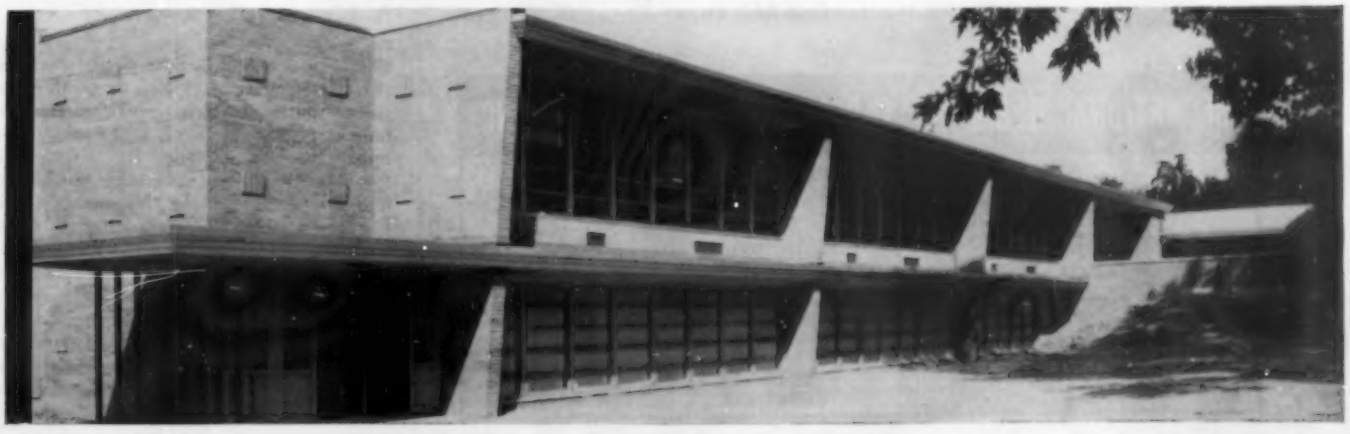
For complete information, contact your local Fenestra representative. He's listed in the yellow pages of your phone book. Or write for our free booklet on Fenestra Super Hot-Dip Galvanizing and Bonderizing. Detroit Steel Products Co., Dept. PA-7, 3409 Griffin Street, Detroit 11, Michigan.

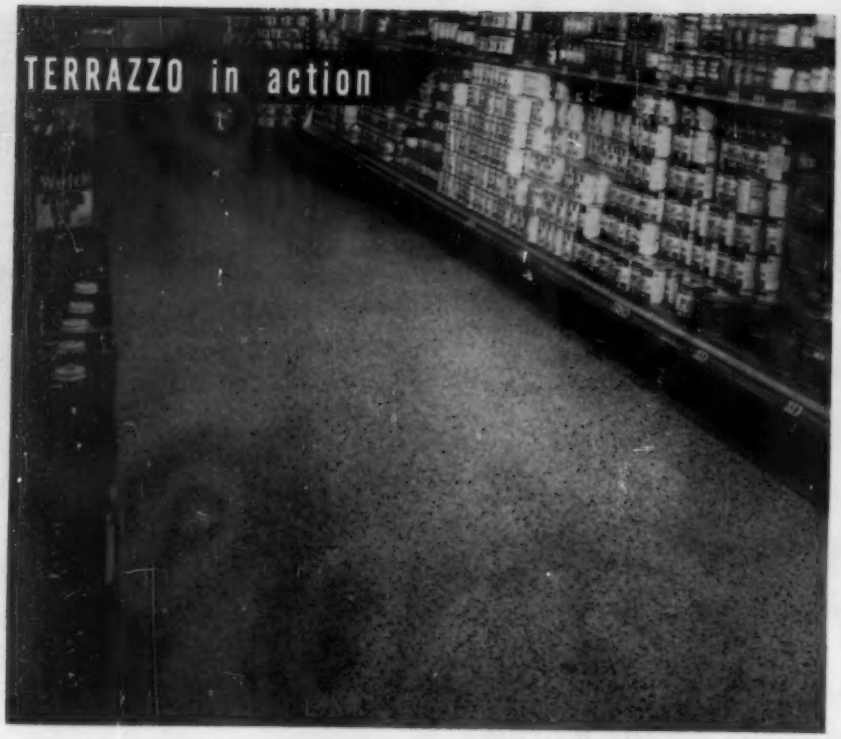
Fenestra GBS INTERMEDIATE WINDOWS

GALVANIZED-BONDERIZED-STEEL — THE STRONGEST MATERIAL, CORROSION-PROOFED FOR LIFE!

ARCHITECTURAL, RESIDENTIAL AND INDUSTRIAL WINDOWS • METAL BUILDING PANELS • ELECTRIFLOOR® • ROOF DECK • HOLLOW METAL SWING AND SLIDE DOORS

Illinois Monroe Avenue School, Peoria Heights, Ill. Architect: Lankton & Ziegele, Peoria. Contractor: Mehlenbeck Bros., Peoria.





Terrazzo

floor lowers overhead

In the retail grocery business—or in any business where pennies count—one way to cut maintenance expense is to specify Terrazzo. Traffic can't hurt it, dirt can't get a foothold in its smooth, jointless surface. Upkeep is minimized; sales are stimulated by its inviting surface and traffic-directing patterns. Specify low-annual-cost Terrazzo for floors, wainscots, walls and stairways—wherever long life is required. See our catalog in Sweet's. Use coupon for free AIA kit.

THE NATIONAL TERRAZZO AND MOSAIC ASSOCIATION, INC.

SHERATON BUILDING

711 14th St., N.W. Washington 5, D. C.

Send free AIA Kit to

Name.....

Firm.....

Street Address.....

City ..... Zone..... State.....

p/a products

(Continued from page 152)

moisture resistant and noncombustible. Thermal conductivity is rated at 0.285; one-in. sheets, measuring 24″ x 48″, weigh .66 lb per sq ft. F. E. Schundler & Co., Inc., 606 Railroad St., Joliet, Ill.

sanitation, plumbing, water supply

Ruud Aluminum Water Heater: new water heater employs aluminum-alloy tank to prevent corrosion and rust-colored water. Automatic gas controls regulate supply of water at two temperatures—180 F for appliances and 125 F for delivery to faucets. Manufactured in four sizes. Ruud Mfg. Co., Kalamazoo, Mich.

Wilbro Garbage-Destruction System: newly developed machine quickly transforms large quantities of garbage into odorless material. Garbage and water are fed by conveyor to digester, where it is reduced to 1/10 original bulk in 10 minutes; indestructible matter (rags, cans, etc.) are screened from digested sludge, which is then dewatered to produce material suitable for compost. Machine is made in small sizes for institutional buildings and in larger models for municipal use. Wilbro Corp., 50 W. Hunter Ave., Maywood, N. J.

specialized equipment

Built-In Television: developed for custom installations, television receiver can be located for best lighting conditions, comfortable eye level, and planned seating arrangements. Television unit, with completely automatic adjustment, features remote-control volume and channel selector. Unit may also be used in conjunction with built-in high-fidelity components. Walsco Electronic Corp., 3225 Exposition Pl., Los Angeles 18, Calif.

surfacing materials

Savannah-Oak Paneling: three-ply wood panels feature special clip system enabling installation without nailing. Grooved, horizontal furring strips are nailed to wall; metal clips lock into furring and into flush V-joints of paneling. Panels are available in 6″, 8″, 10″, or 12″ widths, 8′ long, with matching moldings. Georgia-Pacific Plywood Co., 270 Park Ave., New York, N. Y.

Porcenell Chalkboard: vitreous-finish chalkboard was developed to produce superior writing surface within budget limitations. New method of applying vitreous finish to 22-gage steel by electrostatic spraying is claimed to make chalkboard lighter in weight, more chip resistant, and less costly than porcelain enamel. Glass-hard surface is easy to write on; nonporous surface does not trap chalk dust; mat finish eliminates glare. Available in unmounted sheets or laminated to ¼″ hardboard backing; light, medium, or dark green colors. Porcenell Chalkboard Div., Benjamin Electric Mfg. Co., Des Plaines, Ill.

BRIXMENT

Better Mortar for Blocks

BETTER PLASTICITY

To build the best possible concrete-block walls, the bricklayer must use plastic mortar. The mortar must be plastic enough to stick to the long head joint. It must not drop off the edges of the block when the block is swung up, and lowered into place. It must remain plastic long enough to enable the bricklayer to tap the block down to the line, easily and accurately.

Brixment mortar provides this necessary plasticity. Moreover, it stays soft and plastic long enough to let the bricklayer level, plumb and straighten the unit and adjust it to its final position in the wall before the mortar stiffens.

Louisville Cement Company . . . Louisville 2, Kentucky

Towering Republic National Bank Building in Dallas, Texas, makes spectacular use of Pittsburgh Glass

THIRTY-SIX STORIES HIGH, this new bank building has an aluminum skin and is glazed with windows of Solex® Heat-Absorbing Glass. The eight-story-high rectangular structure, shown here, forms the base of the building and utilizes Solex, Solex-Twindow®, and rough Solex spandrels. Here is another important edifice, among the hundreds throughout the country, which features Pittsburgh products, both outside and inside, for greater architectural unity, beauty, and practicality.

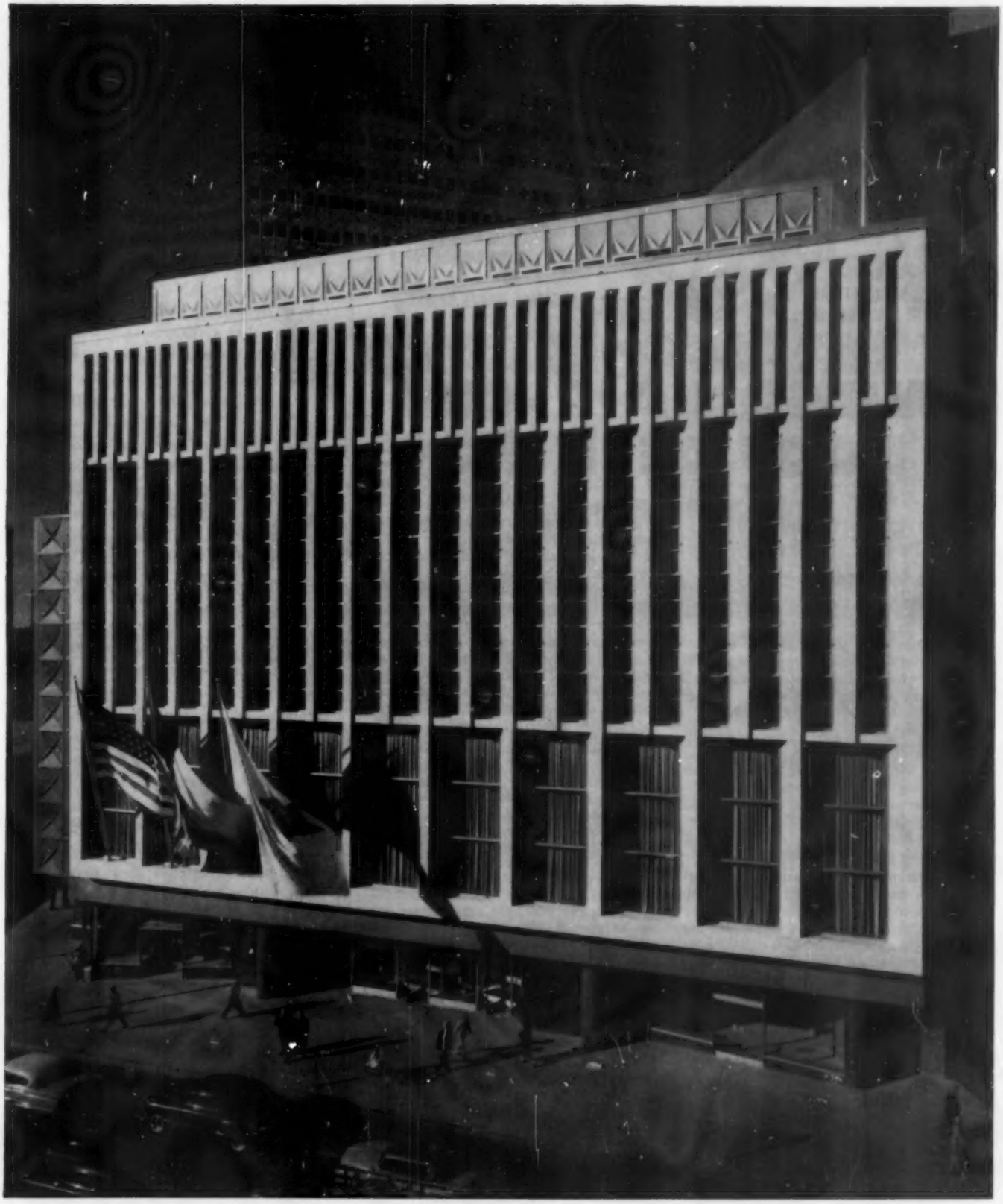
Architects: Harrison & Abramovitz, New York, N. Y.
Associate Architects: Gill & Harrell, Dallas, Texas

THE LOBBY of this skyscraping Texas bank is enclosed with Pittsburgh Polished Plate Glass, equipped with Herculite® Tempered Plate Glass doors. Controlled separation is thus achieved, but with the maximum sharing of light among the various public and work areas.

AMPLE NATURAL DAYLIGHTING is afforded the offices by 3′ x 5′ Solex window units. Through its solar heat- and glare-reducing properties, Solex contributes to greater comfort and less eye-strain and fatigue among the building's occupants.

Look for our exhibit on the Producers' Council Caravan when it reaches your city.

Design it better with **Pittsburgh Glass**

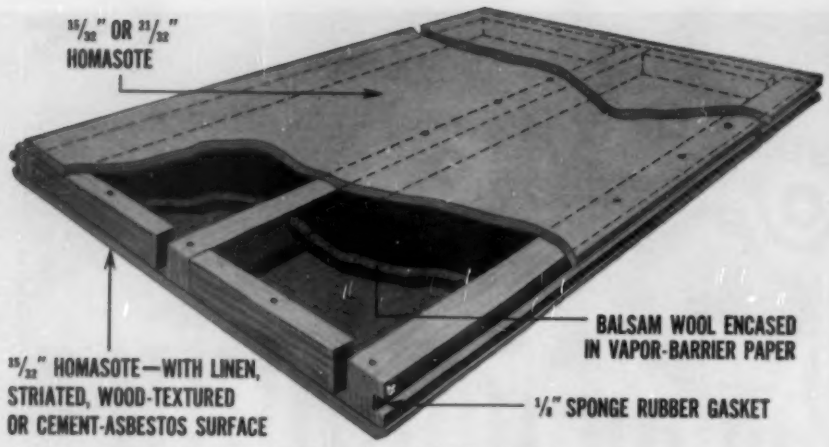


Your Sweet's Architectural File contains detailed information on all Pittsburgh Plate Glass Company products... Sections 6a, 15d, 20, 12a, 15a.

PAINTS · GLASS · CHEMICALS · BRUSHES · PLASTICS · FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED



ANNOUNCING

WILSON AIR-COR ROOF DECKING

—makes condensation problems a thing of the past

—custom-made to your specifications

No matter what the interior or exterior conditions—of climate, temperature or humidity—you need no longer have a condensation problem. The solution—as presented in Wilson Air-cor Roof Decking—is scientific, unique, yet amazingly simple.

Two air channels, running the length of each 2′ x 8′ panel, insure continuous air circulation across the entire roof—automatically and in sufficient volume (1945 cubic inches per panel) to absorb all normal condensation. For extreme conditions, forced air could be used.

Use this scientifically engineered roof decking on flat or pitched roofs—and on any type of structure. Then apply built-up roofing, shingles, slate or metal, as your design requires. The panel is designed for rafter spacing up to 48″ o.c.; nail holes are pre-drilled to your order.

The strength is there; the insulation value is there. (With built-up roofing and 15/32″ Homasote, the U factor is 0.15.) Here is new insurance on air-conditioning investments.

Each panel is made up of three 2″ x 2″ wood members, 12″ o.c., horizontally. On one edge is a wood tongue; on the other a groove. Within the groove a sponge rubber gasket insures a tight seal. The top and bottom sheets are *weatherproof* Homasote. According to your specifications, the top sheet may be either 15/32″ or 21/32″ in thickness; the bottom sheet (which can serve as finished ceiling) may have a linen, a striated, a wood-textured or a cement-asbestos surface.

The top piece overlaps 9/16″ on the groove side, thus shutting out moisture (and also the asphalt of built-up roofing). The bottom piece has a 45° bevel on each side. This overlaps the wood members by 1/32″ to insure a tight joint between sections. Between the wood members—under the top piece—a barrier of 5/8″ Balsam Wool, completely encased in vapor-barrier paper, is glued. At each end of each panel two wood blocks—2″ x 2″ x 8″—provide for satisfactory nailing to rafters or joists. Panels are easily cut to any dimension (or supplied in special lengths, to order).

Sound-deadening partitions and sub-flooring. For interior, sound-deadening partitions, Wilson Air-cor Panels are supplied in 2′, 3′ and 4′ widths and in heights up to 11′ 2″. The combination of Homasote and Balsam Wool creates an unusually efficient sound-deadening barrier . . . For use in partition walls, the Homasote surfaces are applied as panels beveled on both sides—and without overlap . . . For sound-deadening between floors, use the panels as sub-flooring; nail the finished flooring direct to the wood members of the panels.

Wiring—An additional advantage of the air cores is that electric wiring—whether conduit or cable type—may be passed across the roof, thus wiring the building from above. This is not only the most economical method, but permits the placing of light fixtures wherever desired.

Our Engineering Service is available to work with you on any specific problems of roof decking, partitions or sub-flooring. Let us give you complete details and specifications. Kindly address your inquiry to Department G-7.

SEE OUR CATALOG IN SWEET'S

HOMASOTE COMPANY
TRENTON 3, NEW JERSEY

out of school

by Carl Feiss

"Wisdom lies in masterful administration of the unforeseen" Robert Bridges

I see by the paper (*The Evening Star, Washington*, June 1, 1955) that Robert E. Ferry, General Manager of the Institute of Boiler and Radiator Manufacturers, says that a year-round heating-cooling system, powered by a nuclear reactor about twice the size of an automobile battery will be a "practical reality, possibly within a few years." He contends that an "A-boiler" system would be safe, explosion-proof, and cost only $300 for a 6-year charge. This is for a $1000 conversion job. A completely new integrated installation of a boiler and a baby reactor would cost $1500. Cheap at the price and safe from fall-out and chain reaction.

Unfortunately my old oil-heater has just given out and there are no baby reactors on the Washington market as yet. So I pay through the nose for the present technological lag. And this reminds me that I did not quite finish my commencement address last month! There are still some hard-bitten thoughts to get off my chest. Some of them are repeat items, for emphasis, but mostly they have to do with what every young man and every old man should be thinking about these days when faced with technological speed-ups.

Perhaps what worries me the most is the spiritual lag. The social impact of death on the highway! Slums! Juvenile delinquency! Low salaries for teachers and preachers! Drab and chaotic cities! Cheap architecture! Cheap and superficial homes for middle-class America, which should be classless! Baloney campaigns to clean up and fix up what should be torn down to make way for great building.

I look at the horrible FHA packing-box world we are creating around our old, dirty, and decayed cities and then wonder if we have the common sense, the ability, and the humanity to treat our swiftly approaching powers with the respect and the wisdom they deserve. Do we know

(Continued on page 164)

We invite you to look at these

Bayley *FACTS*

Your assurance of the complete service and greater value you want from the windows you specify or buy

Policy of Responsibility

Bayley recognizes that the architect and builder *as well as the supplier* stake their reputations on the quality and performance of every product specified or used. Through 76 years of progressive experience, Bayley has won full customer confidence through consistently superior window *design, construction,* and *service,* backed by the security of time-tested financial soundness.

Nationwide Organization

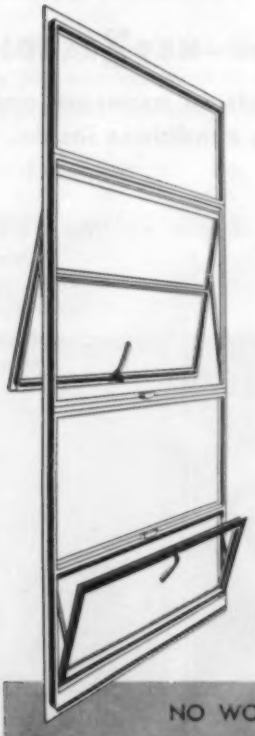
The skill and experience of Bayley's design engineers and service experts is always at "beck and call", through a nationwide organization of well-staffed company offices, supported by trained, franchised agents. The scope of service extends from consultation at the building's inception to actual window performance at the time of occupancy.

Engineering Know-How

Bayley's large staff of highly qualified design engineers — many of them lifetime specialists — offer assistance that extends beyond the construction of windows alone. They have the *pre-engineering* know-how that integrates window design with building design, for maximum advantages in achieving the utmost in better light, air, vision, beauty and durability.

Manufacturing Facilities

You can be sure that every Bayley Window is *Bayley-made;* produced in Bayley plants by Bayley's own careful craftsmen and production technicians, whose long-accumulated skills in the art of making top-quality windows are supplemented by the finest and most modern manufacturing facilities available.



Background and Experience

Bayley's specialization and leadership in the design and manufacture of windows includes 30 years of pioneering experience in development and perfection of curtain wall systems — giving Bayley a strong lead in meeting today's design trends. A list of the country's outstanding industrial, commercial, public and multiple-residence buildings featuring Bayley Windows is also a list of fully satisfied Bayley customers.

Design Leadership

Bayley has an outstanding record for *anticipating* new needs in window design, construction and operation . . . and for meeting new and changing requirements with improved windows that assure better combinations of light, air, vision, beauty and strength. And Bayley has tempered this pioneering of new trends by insistence on persevering in quality construction. Many Bayley "firsts" in window features have become standard for the industry.

NO WONDER IT'S SO OFTEN SAID THAT —

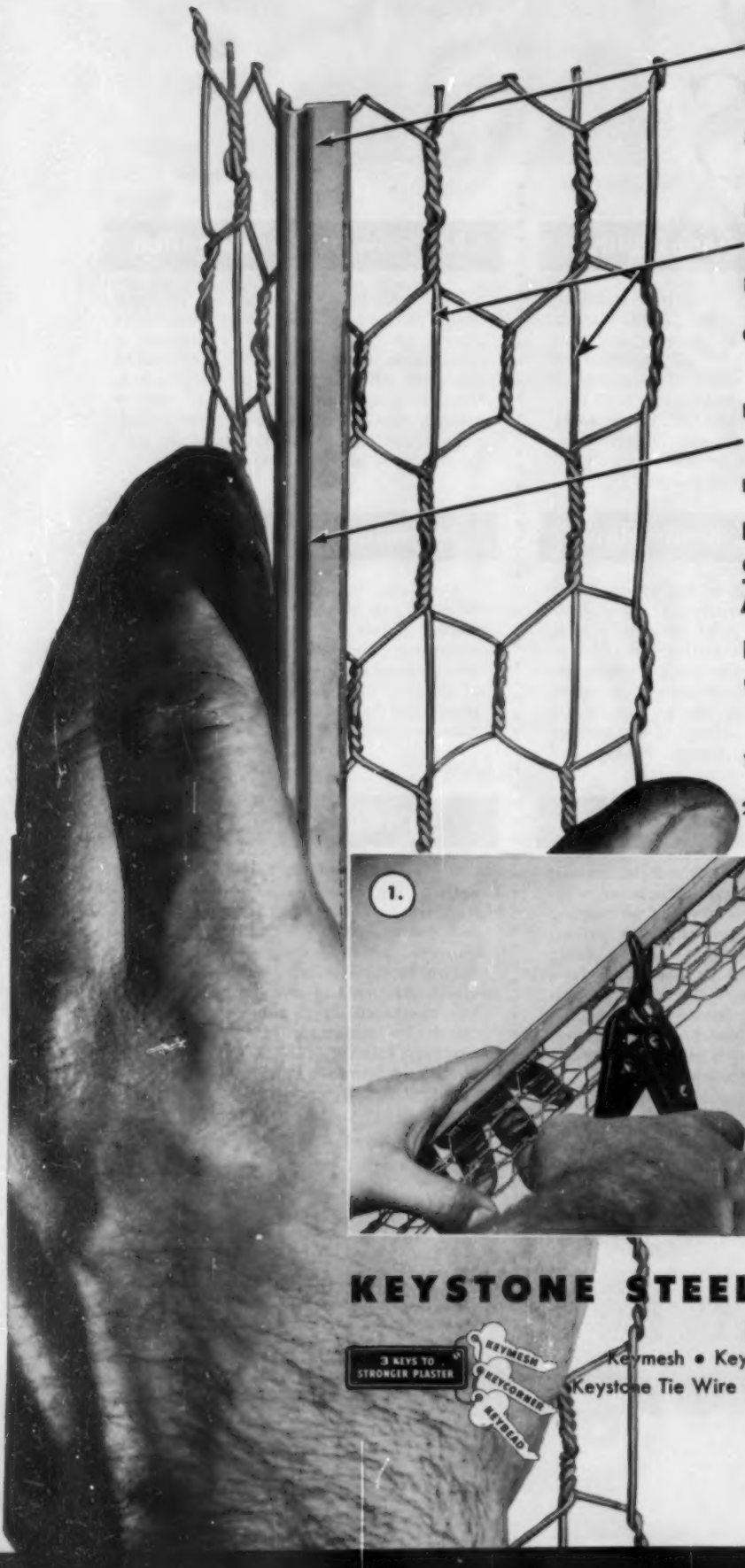
where the *other* services also count — it's always

BAYLEY WINDOWS

THE WILLIAM BAYLEY COMPANY Springfield, Ohio

District Sales Offices: Springfield, Chicago 2, New York 17, Washington 16

now...better than ever



NEW...

stronger, heavier galvanized nose

NEW...

extra reinforcing wires

NEW...

KEYZBEAD—with solid zinc nose, also available.

Ask for it by name—KEYZBEAD!

Beats problems of outside exposure and corrosive atmospheric conditions inside.

1. Keybead is easy to cut and splice with Wiss M-3 or similar snips.
2. Keybead is easy to apply...so easy on the hands, too.

KEYSTONE STEEL & WIRE COMPANY

Peoria 7, Illinois

Keymesh • Keybead • Keycorner • Keystone Nails
Keystone Tie Wire • Non-Climbable and Ornamental Fence

see our CATALOG in SWEET'S FILE

KEYBEAD

you get more for your money

Figure it any way you want—new Keybead is by far your best value in corner bead.

New Keybead nose is 23-gauge steel. No other standard corner bead provides such protection against shock. The reinforcing mesh flanges are tough and strong, make new Keybead very rigid, easy to true up. New Keybead is straight end to end—no waste. And the nose is double electro-galvanized against rust, including all edges.

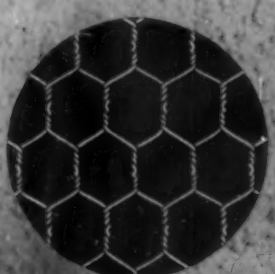
With Keybead you get a *solid corner!* A corner completely filled with plaster. The plaster flows through the open mesh flanges easily, completely embeds every wire . . . does not break the bond of plaster with the gypsum lath. Corner has reinforcement of heavy gauge steel wires running in every direction.

KEYBEAD IS FAR LOWER IN COST THAN ANY OTHER BEAD OF EQUAL WEIGHT!

Only Keybead is available in your choice of Galvanized or solid zinc nose. Use zinc outside, even in salty atmosphere. Use it inside where corrosion is a problem. For zinc nose—ask for "KEYZBEAD."

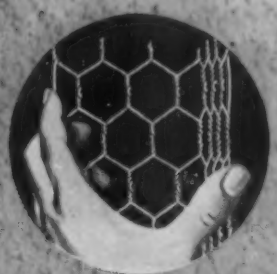
You do get more for your money with new Keybead. Ask for it by name!

better yet... use all 3 keys to stronger plaster



1. Keymesh woven wire galvanized reinforcing lath—applied over the gypsum or insulating lath on the entire ceiling; for highest quality, over all walls, too. This network of multidirectional reinforcing increases strength; increases fire safety 50%. Keymesh assures a uniform thickness of plaster, and guards against cracks.

2. Keybead woven wire galvanized reinforcing lath with the precision-formed bead — applied at all outside corners—or zinc nose for outside applications. Open mesh of Keybead wings permits plaster to completely embed steel wires. Full, solid corners result. Available in standard lengths; easy to splice.



3. Keycorner preformed-for-corners, convenient width, woven wire galvanized reinforcing lath—applied at corners, joints and ceiling-wall junctures. Fits snugly in corners when you flex it. Lies flat, too, for stripping wherever required. Same multidirectional reinforcing as Keymesh for maximum crack resistance.

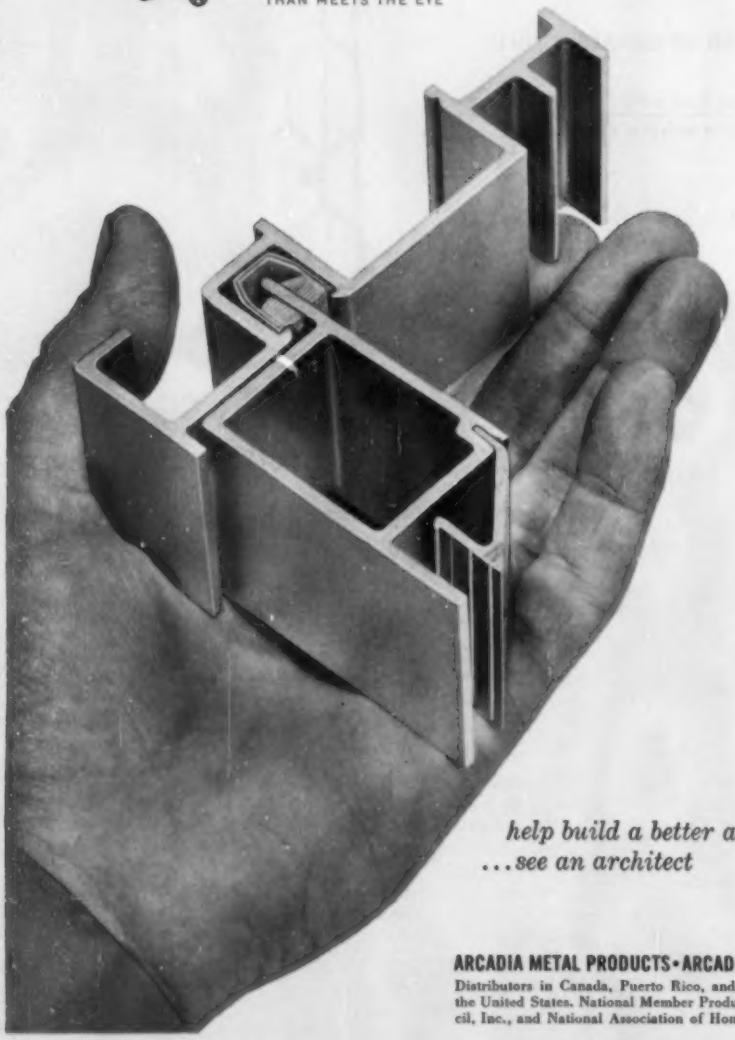
everyone talks about the weather

...But Arcadia solved the weather problem with Twin-Seal Wool Pile Weatherstripping—another important point of difference between Arcadia and other sliding glass doors.

Twin-Seal Weatherstripping on Arcadia's new custom aluminum door is shown below in a section at the latching jamb. A positive weatherseal between jamb and sliding panel is made by a double row of opposing wool pile weatherstrips. Wind, rain, cold and dirt are locked out tightly. Identical wool pile strips at head and interlocker, and a spring-loaded wool pile sill strip complete the four-side weatherseal. Arcadia's aluminum-backed weatherstripping, fully silicoated for moisture and abrasion resistance, is easily replaced without dismantling the sliding panel.

Twin-Seal Weatherstripping is just *one* Arcadia point of difference you should know about. Other important Arcadia features are detailed in our expanded 1955 Catalog 55-A. For a copy, phone your Arcadia distributor or wire us *collect*.

THERE'S MORE TO
arcadia *sliding glass doors*
THAN MEETS THE EYE



help build a better america
...see an architect

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out of school

(Continued from page 160)

enough to be able to stop building more and more chaos and larger and more savage cities, having infinite energy and free flight at our finger tips but only greed and ambition in our heads and hearts? Are we to be wilful children, climbing into the seat of a powerful car, releasing all controls, flinging into the darkest night, and daring the inevitable?

Yet, as educated men, do we want to arrest the progress of science until man is wise enough to know how to avoid burning his fingers or blowing off his head with it? Our brains have not advanced beyond those of the Fifth Century Greeks, although our science has. We would therefore have to put science into the deep freeze for a long time if we wanted our minds to catch up with science. Perhaps we should go to the "wise" men who invented nuclear fission in the first place and ask them what they had intended mankind to do with it.

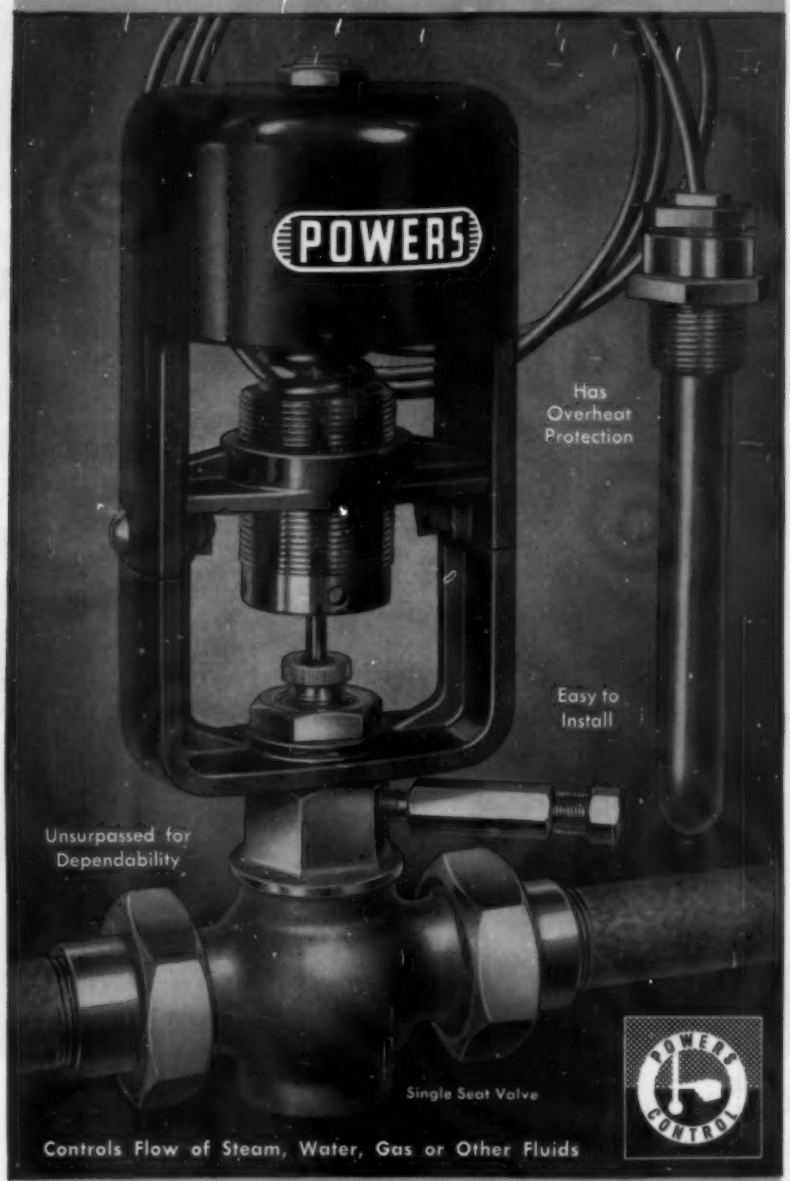
Architecture and planning, like this game our "wise" scientists have played with humanity, can be equally dangerous toys. The Pelions piled on Ossa in midtown Manhattan, or the somber cliffs for homing pigeons we call residences, or the mile after mile of suburban septic tanks we call houses, may all be equally destructive to society—as fearful to consider in their effect on the genetics and soul of man as radioactive fall out from recent purely "scientific" tests in the Pacific and Nevada. That fall out, at least if caught quickly enough, I am told can be washed off with detergents, if you are still alive and your water and detergents are uncontaminated. But there is no detergent which can cleanse a man of the dull, stupid, crowded and worried world he builds for himself. Think about the world we should be building, because the chance is here.

If Lewis Mumford were to rewrite *Technics and Civilization*, (1934), he would undoubtedly question his thoughts of 20 years ago. I quote him below (not to point a finger but to indicate that even our most intelligent humanists have inadequate means of anticipating our purely scientific wise men). For those scientists

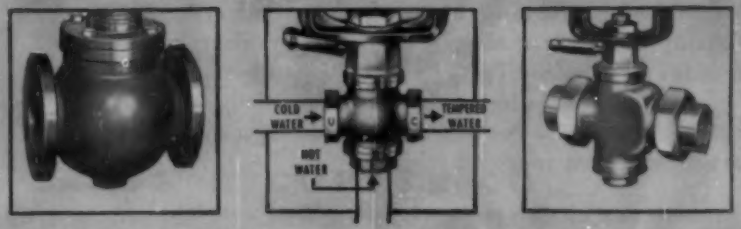
(Continued on page 168)

POWERS No. 11 Self-Operating TEMPERATURE REGULATOR

Automatically holds temperature constant at the right point. Prevents losses caused by wasteful OVER-heating.



Controls Flow of Steam, Water, Gas or Other Fluids

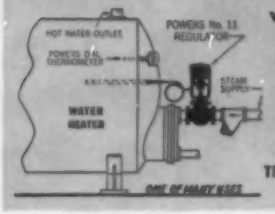


Various Valve Bodies and Inner Valves are available. Single and Double Seat Valves thru 2" have rugged bronze bodies with bronze union connections for quick, easy installation. Bulletin 329 gives information about all types.

(c38h)

Why It Gives BETTER CONTROL and Saves More Money

Users Report 10 to 20 Years Service without repairs



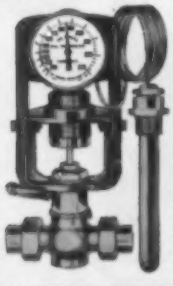
Simplest, Reliable Control for WATER HEATERS Heat Exchangers Fuel Oil Heaters

They Stop Hot Water Complaints

ONLY POWERS No. 11 REGULATOR Offers ALL These Advantages

- **Simple, sturdy construction.** Materials used are corrosion resistant.
- **Powers bellows has 50% more power** than used in the majority of regulators. The heart of a self operating regulator is its bellows. Powers with its 50% greater effective area gives better control and its durable 2 ply bellows outlasts ordinary single ply bellows.
- **Oilite thrust bearing** facilitates easy temperature adjustment.
- **Extra-heavy-wall capillary** needs no armored tubing.
- **60°F. temperature ranges** available with accuracy of ±1°F. on some processes and 2 to 3°F. on others.

No. 11 TEMPERATURE INDICATING REGULATOR



with easy to read 4" dial thermometer helps adjust the regulator and check temperature at the bulb. Various dials and ranges are available.

- **Valve stem lubricator** with silicone grease aids easy movement of highly polished stainless steel valve stem and reduces drying out of packing.
- **BETTER CONTROL** results from Powers powerful bellows and minimum of valve stem friction.
- **POWERS Nationwide Service is available** in chief cities. Stock points in strategic centers aid fast delivery.
- **Right type and size of valve is important for good control.** May we help you make the right selection? Benefit from POWERS more than 60 years experience in self-operating regulators.

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Skokie, Ill. | Offices in Chief Cities in U.S.A.
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Automatic Temperature and Humidity Control

Established 1891

Miami Beach's new $15,000,000 Fontainebleau Hotel depends on Chase Copper Tube and Fittings for entire plumbing and air conditioning systems!

Luxury and practical utility are perfectly combined at the Fontainebleau! Everything is top quality—so Chase Copper Tube and Fittings were chosen for the plumbing and air conditioning systems!

Using Chase Copper Tube and Fittings pays off in top-performing, longer-lasting systems that add extra value to any home or building. Such systems, too, cost *little or no more* than ones of ordinary rustable materials! That's because Chase copper tube and fittings can be installed faster—substantially reducing installation costs! Specify Chase copper tube and fittings on your next job!

Here's how the mechanical contractors sum up their reasons for using Chase materials:

"We have been using Chase Brass and Copper for many years. Chase has always maintained the highest quality in their industry. Their quality along with their excellent service to customers is a combination that makes Chase superior."

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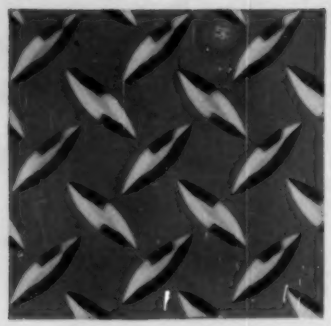

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How many 40 points in a SUPER-DIAMOND?

You'll find 40 non-slip traction points, angle-engineered to safety, in every footstep of A.W. SUPER-DIAMOND, the lifetime-lasting rolled-steel floor plate.

Count the other points which make for combined economy and safety in this master flooring for entire floors or small areas—low cost, overnight installation, durability, easy cleaning, fast draining, resistance to fire, heat and most chemicals—and you'll find that every foot in your plant is safer when you install the exclusive-patterned

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For plants where oil, water and grease raise special problems of slipping accidents, we suggest a check on the special qualities of A.W. ALGRIP . . . the world's only abrasive rolled steel flooring.

out of school

(Continued from page 164)

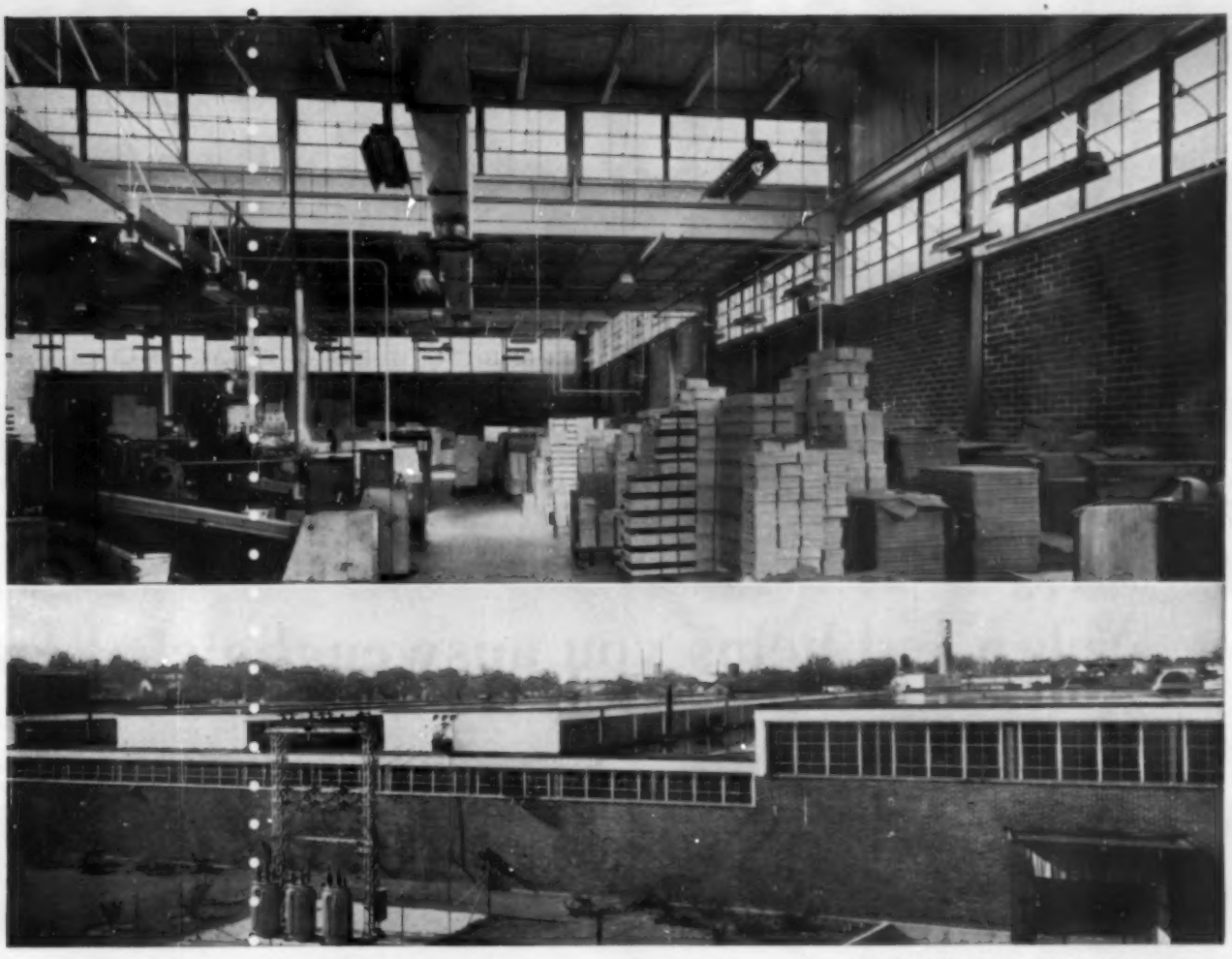
who believe in the perfection of "pure" science do not ask our all too few Mumfords what the results of their test-tube pure science may be on the people who may be afflicted with, or perhaps could enjoy the results of, the experiments. Mumford said in 1934: "In our technics, countless improvements of course remain to be made, and there are doubtless numerous fresh fields still to be opened: but even in the realm of pure mechanical achievement we are already within sight of natural limits, not imposed by human timidity or lack of resources or immature technics, but by the very nature of the elements with which we work. The period of exploration and unsystematic, sporadic advance, which seemed to the 19th Century to embody the essential characteristics of the new economy, is rapidly coming to an end. We are now faced with the period of consolidation and systematic assimilation."

This is not the end and we have no time for consolidation, but there is much to assimilate. Wishing will not build better cities with the powers now in our hands, since 1934. Using our older powers, we still are not doing too well. We are still unable to cope with the pedestrian, let alone the automobile and airplane. We have trouble in designing a good place to live in and then keeping it good. And we are lost in our complexities of living and work.

There is an interesting controversy raging which is perhaps the best illustration of what I am talking about. At Echo Park in Dinosaur National Monument, the confluence of the Yampa and the Green Rivers, near the spot where Colorado, Utah, and Wyoming meet, the Bureau of Reclamation wants to build a great dam for water power purposes. But conservation and recreation interests raise the cry that the great and beautiful canyons must never be violated by utilitarianism. There seems to be no valid compromise. By the time this article appears in print, a decision may have been made. Either way it will not have satisfied a problem—utility versus beauty, science versus humanism. Yet in this case, science is intended spe-

(Continued on page 174)

COOLITE GLASS BRINGS COMFORT BY THE ACRE



Moscowitz, Willner & Millkey, Architect. J. A. Jones, Contractor.

Montag's New Paper Plant Keeps Bright and Comfortable Under 24,000 Sq. Ft. of Coolite

Montag, maker of fine stationery and school supplies for 65 years, recently occupied its new plant.

The Montag building covers 280,000 square feet and was designed to be the most modern stationery and school supply plant in the world. Conceived as an ideal plant for people and machines, it provides finest lighting, heating, humidity conditions and employee working and recreational facilities.

To achieve these aims, it is copiously daylighted with over 24,000 square feet of Coolite Glass by Mississippi. Coolite not only provides high levels of comfortable illumination, diffusing harsh sunlight for visual comfort . . . it absorbs much of the unwanted and uncomfortable solar heat rays, helps keep the vast interior cooler on brightest days.

Employees feel better, see better, work better under Coolite . . . for Coolite filters out unwanted harsh qualities of "raw sunlight" . . . permits extensive use of glass for low cost daylighting without undue heat.

In new construction or modernization, specify translucent light diffusing glass by Mississippi. Manufactured in a wide variety of patterns and surface finishes to help you solve any daylighting problem. See your nearby distributor of quality glass.

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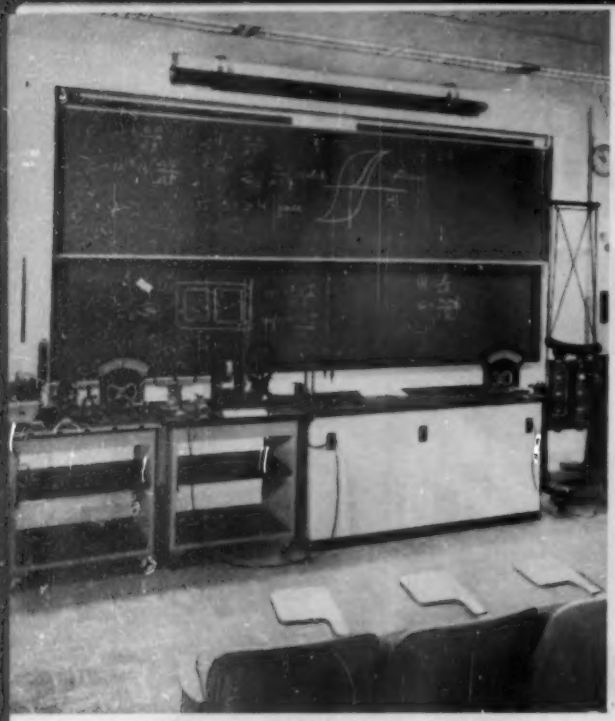
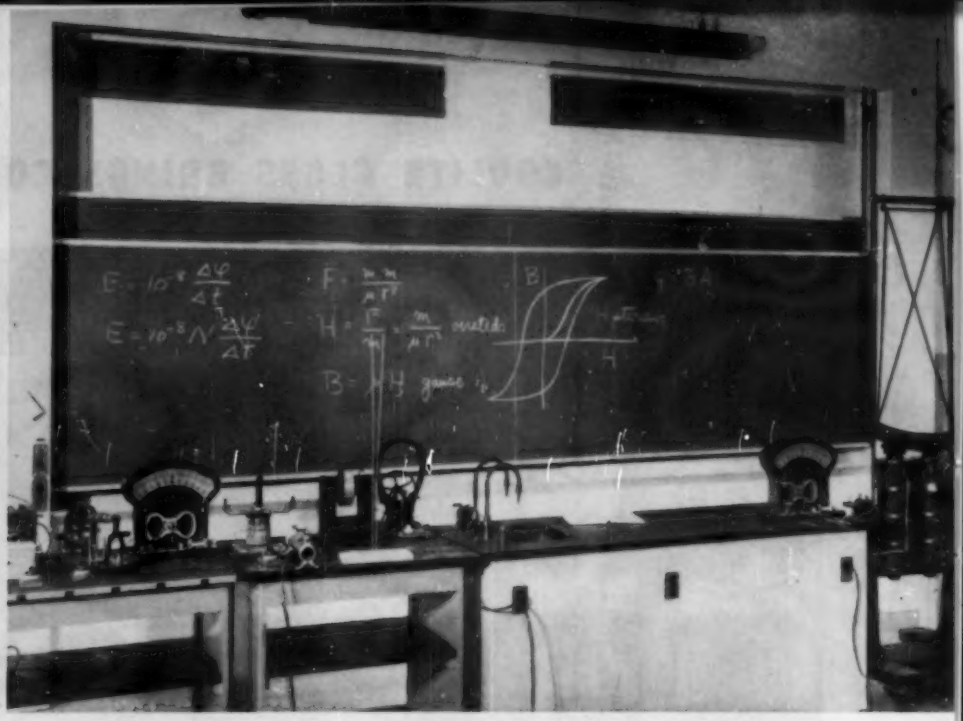


SLIDING DOUBLE WELDWOOD CHALKBOARD installed in the physics laboratory, University of Pennsylvania, moves on tracks, is electrically operated.



AT EXAM TIME quizzes are prepared on lower chalkboard and covered until needed. Another example of the versatility of Weldwood Chalkboard! Arch: James R. Edmunds, Jr. Installed by: A. M. Masters & Son.

How Weldwood helps you answer the challenge

BEAUTIFUL Weldwood birch paneling and built-in storage wall keys decorating scheme at Hillandale Elementary School, Montgomery County, Md. Arch: McLeod and Ferrara.

INSTALLED COST of Weldwood Chalkboard is usually less than for ordinary chalkboard; it needs no costly fixed grounds or other surface preparation: it mounts directly to wall.

BUILT-IN storage cabinets of Weldwood birch keep classrooms neat, help get away from the old-fashioned "institutional" look. And maintenance costs almost nothing.

# of school design

School boards and building committees are looking for new ways to combine beauty and function, new ideas on saving space and lowering maintenance costs. And Weldwood school products can help...

Take Weldwood Chalkboard for example. It's a combination chalkboard, bulletin board and visual aid board. Its porcelain-on-steel* face attracts magnets for posting papers and visual aids, its glare-free green color is easy on young eyes, and chalk never "squeaks" on its velvety surface.

Weldwood Chalkboard never needs refinishing. It's composed of a porcelain-faced steel sheet bonded to strong, rigid plywood backed by a sheet of aluminum for balanced construction. It won't shatter, buckle, warp or break under impact, stress or temperature changes.

Beautiful Weldwood hardwoods for paneling and built-ins are another example. Real wood adds a warm and cheery note to classrooms, gyms, lounges and corridors. And it practically eliminates periodic redecoration since Weldwood needs only an occasional waxing to keep it looking new indefinitely.

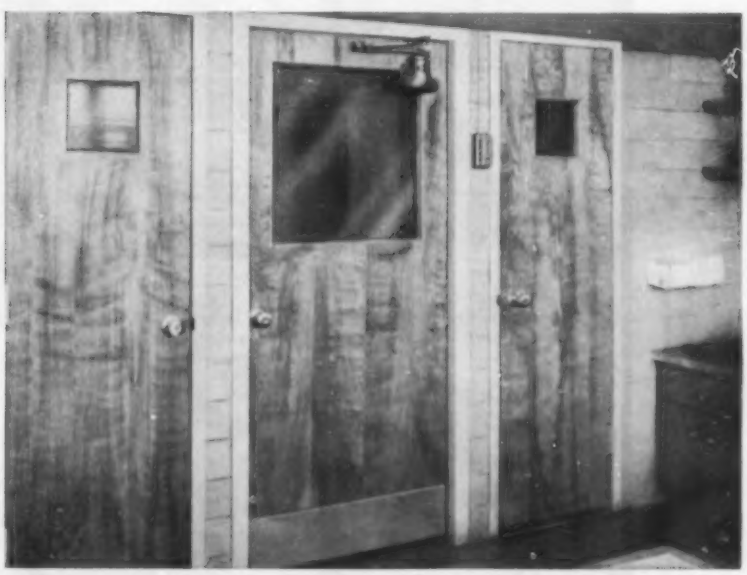
You choose from world's fine woods like walnut; oak; birch; African, Philippine, and Honduras mahogany; cherry; Korina®; maple; and American elm. Exotic species such as Brazilian rosewood, teak, satinwood and zebrawood are also available on special order.

And Weldwood Fire Doors provide the utmost in fire protection. They come in Weldwood veneers to match paneling and are made with the exclusive Weldrok® mineral core patented† by Weldwood.

Guaranteed for life. All of these superior Weldwood products for schools are guaranteed for the life of the building in which they are installed.

For more details on Weldwood Chalkboard, paneling and doors send the coupon or visit any of the 87 United States Plywood Corporation showrooms in principal cities.

*Porcelain faces by The Bettinger Corp. †U.S. Patent No. 2,500,050



WELDWOOD FIRE DOORS are available in flush style or with light cut outs. Lake Hiawatha School, Troy Hills, N. Y. Arch: Emil A. Schmidlin.

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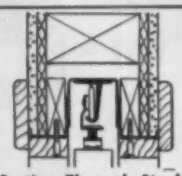
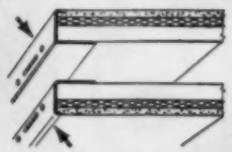
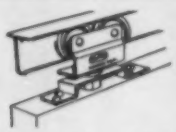


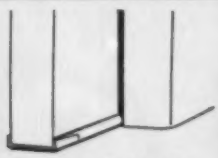
Section Through Steel Header Showing Factory Installed Aluminum Track



Section Through Split Jambs Showing Heavy Gauge Steel



New Aluminum Track and Adjustable Hangers Especially Designed for Pocket Doors



Aluminum Guide Strip Attached to Bottom of Door. Guides Door Into Pocket

Now you can build wall pockets the modern, improved way with Sterling Pocket Door T-Frame. The new Sterling T-Frame protects against warpage . . . makes pocket sturdier . . . insures trouble-free performance. Complete package includes all steel header and split jambs, track and adjustable hangers and guide strip.

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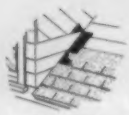
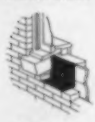


Step flashing

Flashing window and door heads

Drip cap flashing

Foundation damp-coursing, termite shield



Sill flashing

Dampproofing basements

Flashing door and window openings

Copper Armored Sisalkraft does heavy gauge copper's traditional quality job of protecting against moisture at tremendous savings.

This product is recommended for all concealed flashing and waterproofing. It's impervious to moisture and air, won't kink, break or tear. Easily applied. Meets FHA flashing requirements.

Copper Armored Sisalkraft is pure Anaconda copper bonded to heavy crepe kraft with special asphalt, reenforced with tough fibers. Available in the following weights of pure copper per sq. ft.: 1 oz. — 2 oz. — 3 oz. Widths: 4″, 6″, 10″, 12″, 15″, 20″, 30″, 60″. All in rolls of 120 lineal feet. Ideal for decorative purposes, too!

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"Storm-Sashes" the walls of 5-room house for about $30. (Aluminum Coated 2 sides)

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A rugged waterproof paper for protection and for curing concrete.

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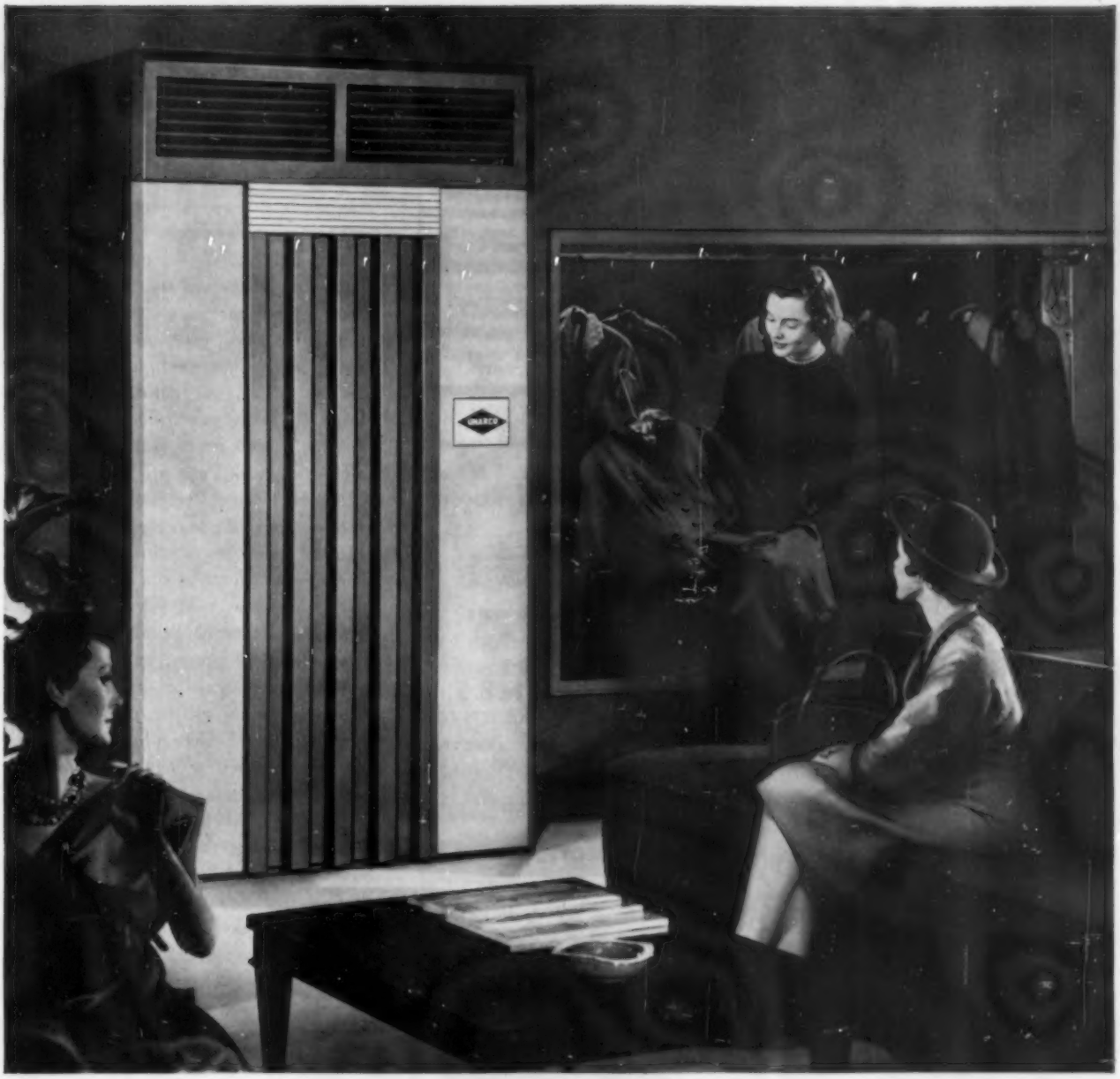

when STYLE *makes the sale*

Style is all-important when selling women's garments. And style is also a vital consideration in building quiet, efficient air conditioners. The UNARCO *ROYAL-AIRE*® is a smooth-operating conditioner, that is functionally styled to provide *balanced* air intake, assuring quiet performance.

Wherever people gather the UNARCO *ROYAL-AIRE* supplies comfort cooling, adding distinction and profit. Salesmen and customers alike are more relaxed, *more receptive* when comfortably cooled.

Plus features of the *ROYAL-AIRE* include an accessible hermetic compressor that minimizes maintenance, an oversize variflow blower and vertical cooling coil to provide maximum output, and the exclusive UNARCO pump-down control system which guarantees instant response.

For clothing store or drug store, restaurant or office, the *ROYAL-AIRE* is your *economical* buy! We invite inquiries and shall be happy to send you descriptive literature. Write HEATING & COOLING DIV.

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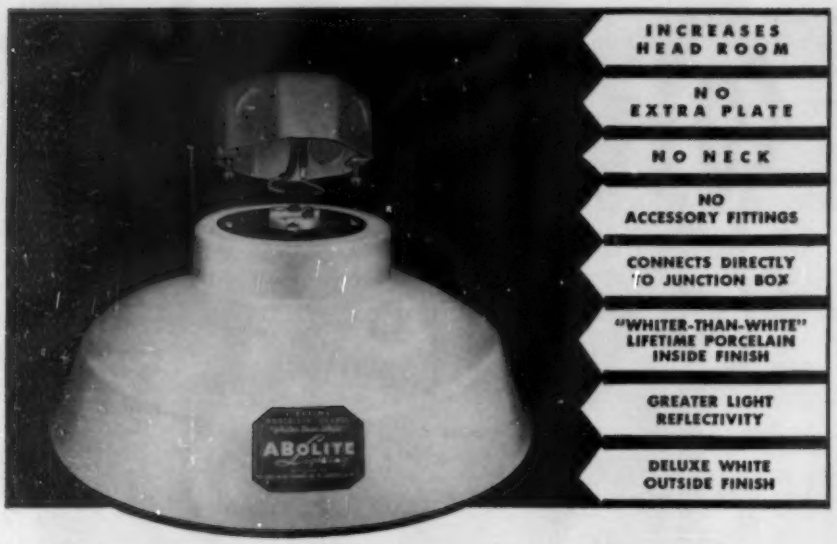

ABOLITE Outlet Box Reflectors Give More Head Room In Low Ceiling Areas

ABOLITE Outlet Box Reflectors are specifically designed for low-ceiling areas in passageways, docks, stockrooms, warehouses, etc. They mount without accessory fittings, provide for faster, more economical installation, and are available in shallow dome and standard dome shapes.

Where head room is restricted, the answer is ABOLITE Outlet Box Reflectors! WRITE TODAY FOR DATA SHEET!

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Better buildings for the motor traveler . . .

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The only *complete* up-to-date book on the subject of motels exclusively! Here you'll find all the information you need on design essentials—plus a wealth of ideas and sound information based on actual experience in building and operating many types of roadside accommodations.

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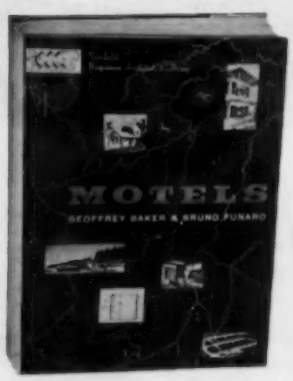
Order your copy *now* to read and examine for 10 days FREE!



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out of school

(Continued from page 168)

cifically to assist human interests—not too separate from monetary, but for human needs at least—water and power.

When our buildings and our cities are heated and lighted by nuclear power, when our garbage and refuse are disintegrated by nuclear power, when our steel is made from heat generated not by coke but nuclear fission, when our coal mines are shut down, our gasoline refineries closed, our water power plants outmoded, then the arts of peace should have time to flourish. Echo Park will return to the wilderness it should remain, and we will all have time to dig in our garden. But....

If the game the scientists have been playing with atoms is won by them, and it is clearly proved by full scale experiment that nuclear chain reaction can circumnavigate the globe in one hour or less and without the use of hands, then of course you and I will be relieved of any responsibility for making limitless energy into a useful tool for mankind. Pure science will have succeeded in proving its final point. No such fine point can be determined within the impure science of humanism. But I don't like a psychology that says, "Until Armageddon let's do our best to make our last days pleasant and reasonably joyous!"

It is silly to wait around for someone to make the next move in this unprecedented situation. The arts of peace have never before been in such complete terrestrial opposition to the arts of war, with all of life at stake between them.

How do we find answers? There is one move that ought to be taken very soon. A group of young architects might be able to do it better than some of us old timers. It means working quickly to become architects and planners — active, recognized professionals with status in the professional organizations—peers in our profession on the same high plane as the nuclear physicist on his. Then, probably only then, can you go to him and say (and I would call a big conference at the White House to do this):

"Brother scientists and technicians, here we are on this very small planet together. You have had your fun and got-

(Continued on page 182)

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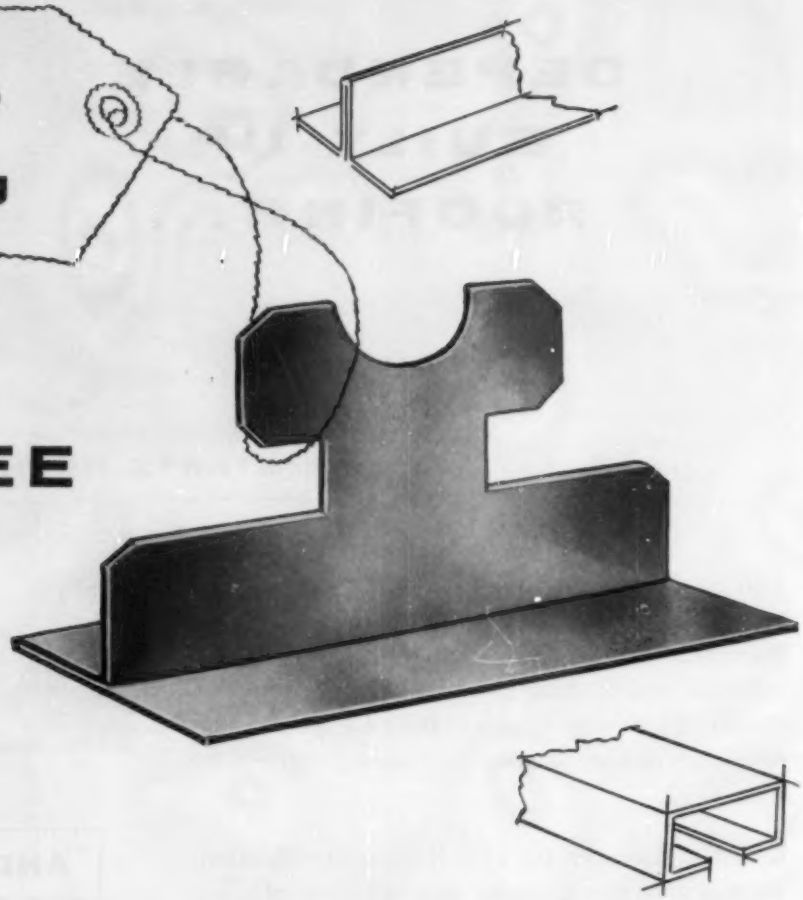

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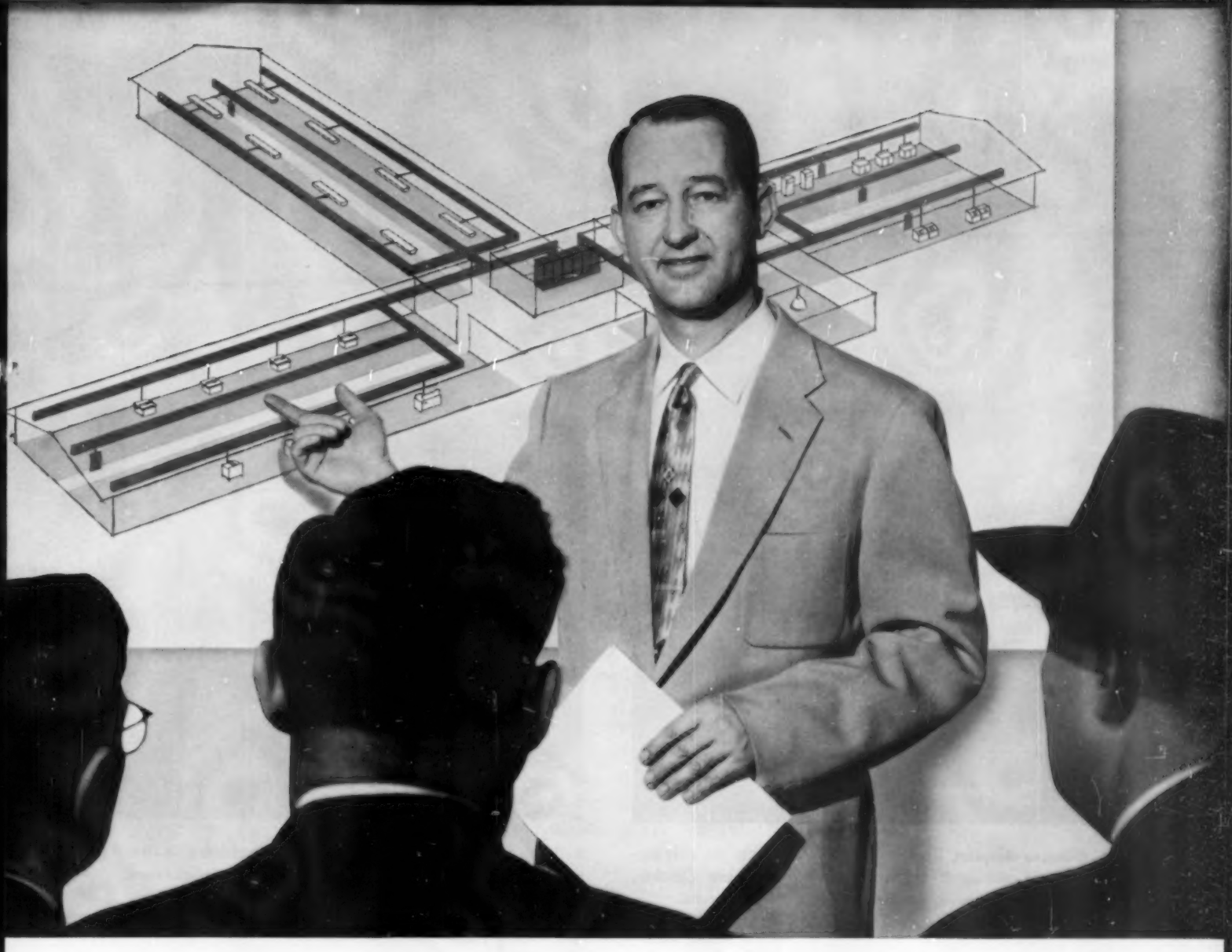


FACT: FROM SCHOOLS TO SKYSCRAPERS YOUR ELECTRICAL PROBLEMS ARE OUR ASSIGNMENT

Westinghouse men like these are working with architects throughout the country on all types of building construction.

They are electrical specialists.

Their assignment is to help you solve electrical problems—from classroom lighting in a school to a complex electrical system for an industrial plant.

Check the examples on the next three pages.

THE MAN WITH THE FACTS

He's the construction sales engineer in your nearby Westinghouse office. His assignment is to analyze your electrical problems, then quarter-back the team of specialists that help you solve them. We call him *The Man With The Facts*. Why don't you call him? DP-5010-A

YOU CAN BE **SURE**...IF IT'S **Westinghouse**

Genesee Hospital, Rochester, N. Y. Architects (for new section): Waasdorp & Northrup. Consulting Engrs: Crocker, Cherne & Dickason, Associated Consulting Engineers.

Building-type switchboard is a factory-assembled unit containing modern circuit breaker protective devices. Switchboard is compact and completely safe.

FACT: THEY ASSURED DEPENDABLE SERVICE THROUGH CIRCUIT BREAKER PROTECTION

Dependable electrical service, to insure trouble-free operation of patient services, was a paramount consideration when the Genesee Hospital extension was planned. Proper protection of valuable equipment and operating personnel was a necessity.

A Westinghouse apparatus specialist was asked for advice on an electrical system that virtually eliminates outages. The foundation is a Westinghouse building-type switchboard with circuit breaker protection for the 24 feeders. In case of a fault or overload, service is restored quickly. A flip of the breaker handle does it.

Why not have your Westinghouse specialist help you with similar problems?

DP-5010-B

YOU CAN BE **SURE**...IF IT'S

Westinghouse

Houston Water Purification Plant, Houston, Texas. Engineers: Freese, Nichols & Turner, Houston, Texas.

FACT:

THEY SIMPLIFIED PLANT OPERATIONS BY GROUPING ALL MOTOR CONTROL

A centralized motor control system was a basic objective in this new water purification plant. Over 100 motors are required.

The solution: Westinghouse control centers that group motor starting and protective devices in neat, compact enclosures. Moreover, complete flexibility of Westinghouse control centers assures easy, economical expansion—a major consideration here. Eventually, installed horsepower may more than double.

Whatever the motor control problem, your Westinghouse specialist offers you this same kind of service.

DP-5010-C-1

Control center groups, in a single enclosure, controls for 57 motors. Thus, one man, at a glance, can check over-all motor operations.

Elm Hill School, Newington, Conn. Architects (for new extension): Carl J. Malmfeldt & Associates, Hartford, Connecticut. Consulting Engineers: Henri B. van Zelm & Associates, Hartford, Connecticut.

FACT: THEY SOLVED SHADOW PROBLEMS CAUSED BY LOW CEILING JOISTS

Main support joists in this new classroom created a lighting problem: the possibility of shadows due to the broken ceiling surface.

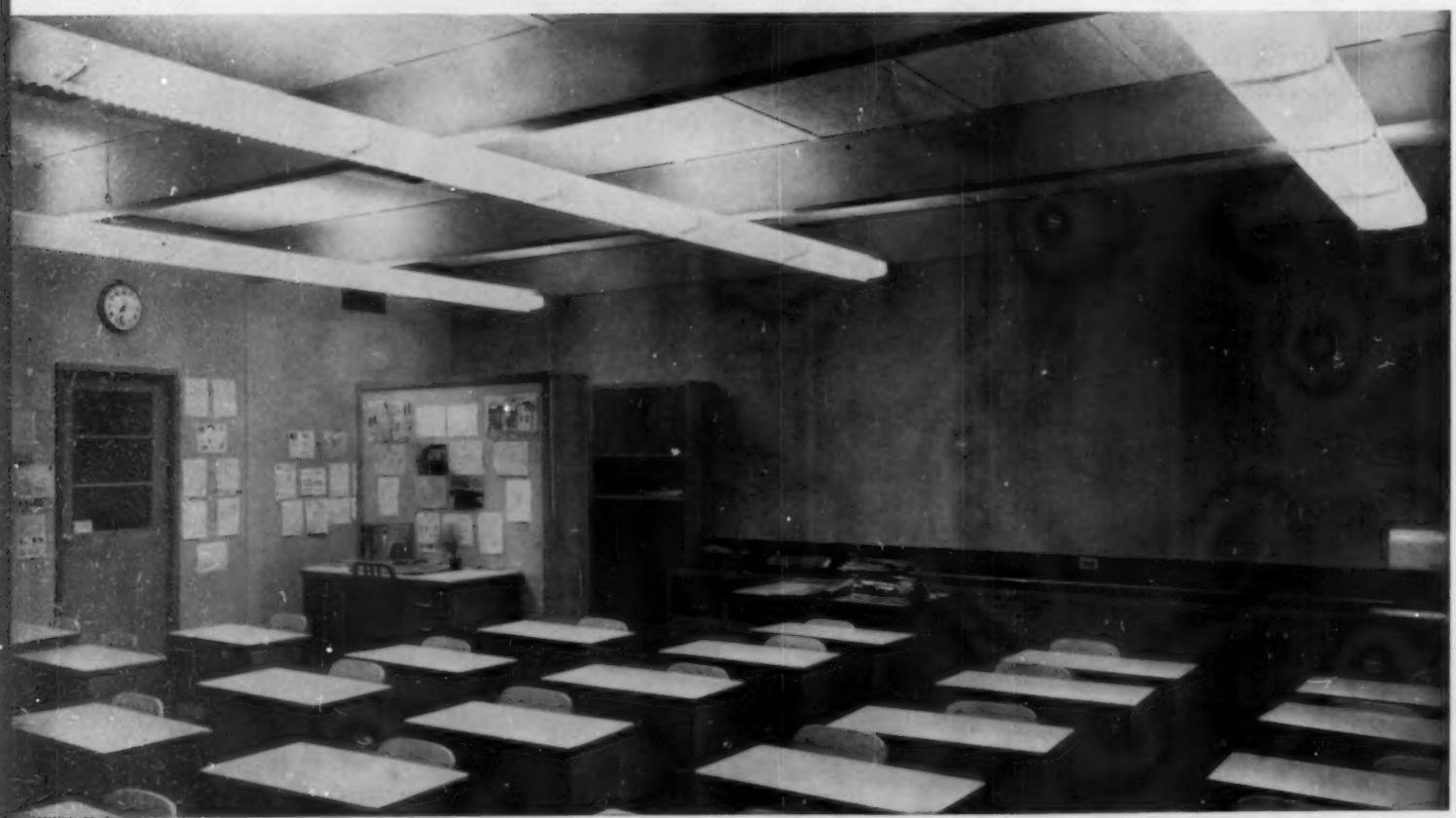
The architect and consulting engineer approved the new Westinghouse LC luminaire, mounted in continuous rows perpendicular to the ceiling joists.

Shadow problem: solved. In fact, 50 foot-candles of shadowless, direct-indirect illumination were provided—a result you, too, can secure.

Why don't you call your Westinghouse specialist to help you solve similar problems?

DP-5010-D

LC fluorescent luminaire, a direct-indirect type, provides high illumination in all parts of the room.



YOU CAN BE **SURE**...IF IT'S

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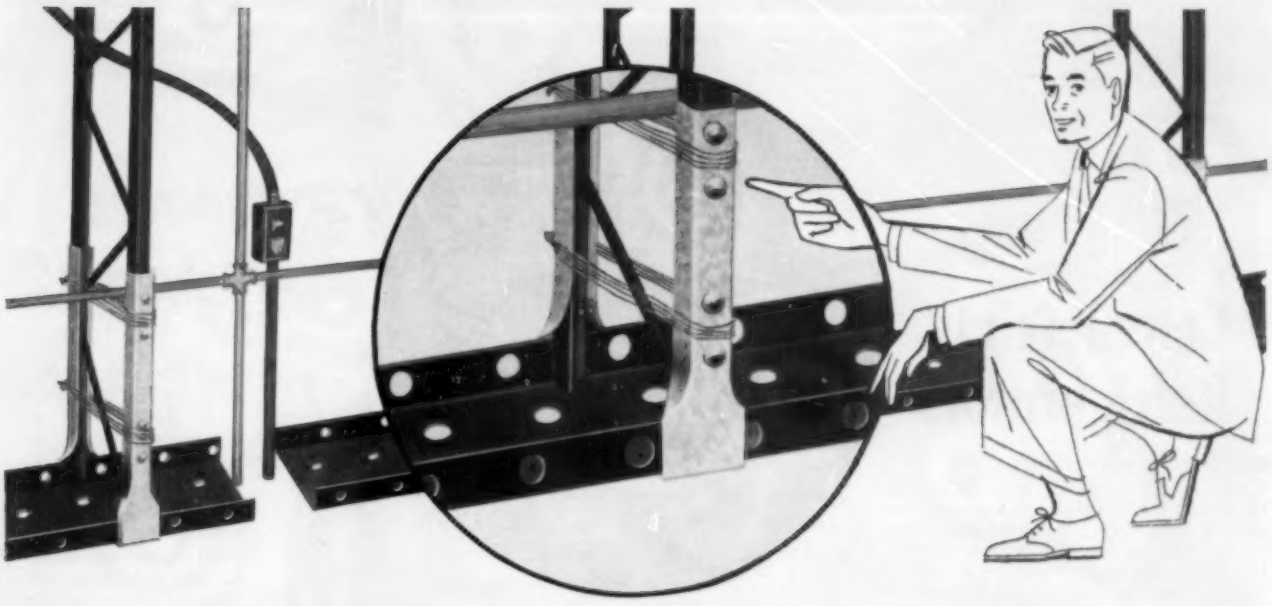
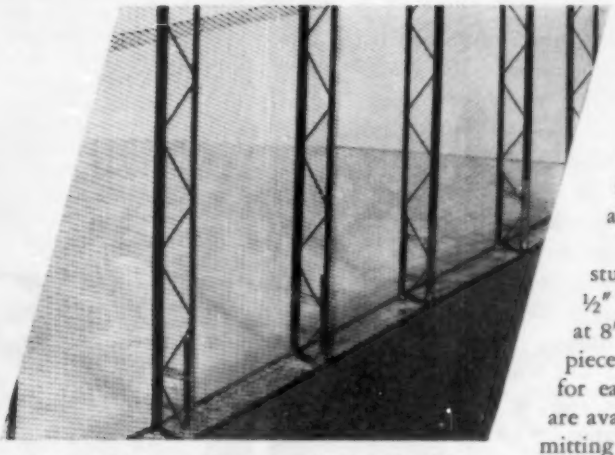
Now simplify utility routing with new Gold Bond HOLOSTUD Wall System





Gold Bond Holostuds can be put up simply and quickly. All connections are made easily with wire ties. Ordinary lather's tools are all that is required to erect the entire Holostud Wall System.

The strut-type construction of the *new* Gold Bond Holostud provides more room for ducts, plumbing and electrical conduits. This non-load bearing partition system is especially designed to facilitate vertical or horizontal routing of utilities. Has excellent fire, sound, and shock resistant properties. Goes up fast, has exceptional strength and rigidity. Adaptable to either metal lath or gypsum application.

The system is composed of prefabricated steel studs, tracks and shoes. Studs are fabricated with ½″ x ½″ angles securely braced by struts welded at 8″ intervals. Floor and ceiling tracks are one-piece channel-shaped units with ½″ legs, perforated for easy lath attachment. Gold Bond Holostuds are available in 2½″, 3¼″, 4″ and 6″ widths, permitting use of the system in four different partition thicknesses.

Complete technical data is available on new Gold Bond Holostud Wall System. Write:

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Remember too, with stainless the *first* cost is the *last* cost! It is wise to investigate the use of stainless steel in applications such as refrigerators and other allied products in food service equipment.

Washington Steel Corporation, producer of MicroRold Stainless Steel sheets, is a supplier to fabricators engaged in the manufacture of these and similar stainless products. Your inquiries are welcomed.

*Photo courtesy of
STAINLESS FOOD EQUIPMENT CO.

Washington Steel
Corporation
Washington, Pennsylvania

out of school

(Continued from page 174)

ten away with it. We happen to be scientists who could, if we wanted to, also experiment with pure science. We could build so permanently that after your last bomb blast and all life is extinct, our cities would remain intact as proof that our skill is at least as great as yours. But how about adding to our formulas the now missing element of human well-being? Not just medical isotopes and isotopes used as tracers in household cleansers: we want to join forces to build a better world. We sincerely believe that this new element added to the core of the atomic pile will result in a greater civilization than we have ever dreamed of. If this element cannot be added, then gentlemen, the world is yours—and let her rip!"

What has this to do with education? I am not sure. Design is a curious element in the world of the spirit. Like poetry and music, its impact is emotional. It is rational only in the way that emotion may be identified scientifically by the few known measurements.

The man who designs a city, a hospital, a school, or housing project, who studies his problem not as a "machine for living" but as a living organism—feeling man's problems in terms other than book understandings; working toward those indefinable solutions, translatable into fire only by love and experience—that is the man who can transmute technology into destiny and convert a cheap FHA subdivision into a Parthenon. There are many things that you will build which I will never see. For good or evil they will stand for generations to use to their pleasure and satisfaction, or to their misery and possible destruction.

There are no searchlights other than your own conscience to tell you whether you are rescuing your fellow man from the shallow cities in which he drowns. The silent crowd stands helpless, futile, and deeply accusing.

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The late Albert Loecher who executed above rendering of U.S. Veterans Hospital, Wilkes-Barre, Pa.
Kelly & Gruzen, Arch's.

The 2886 Mars-Lumograph drawing pencil, 19 degrees, EXEXB to 9H—$1.50 per dozen—less in quantity. The 1001 Mars-Technico push-button lead holder — $1.50 each — less in quantity. 1904 Mars-Lumograph imported leads, 18 degrees, EXB to 9H—$1.20 per dozen—less in quantity.

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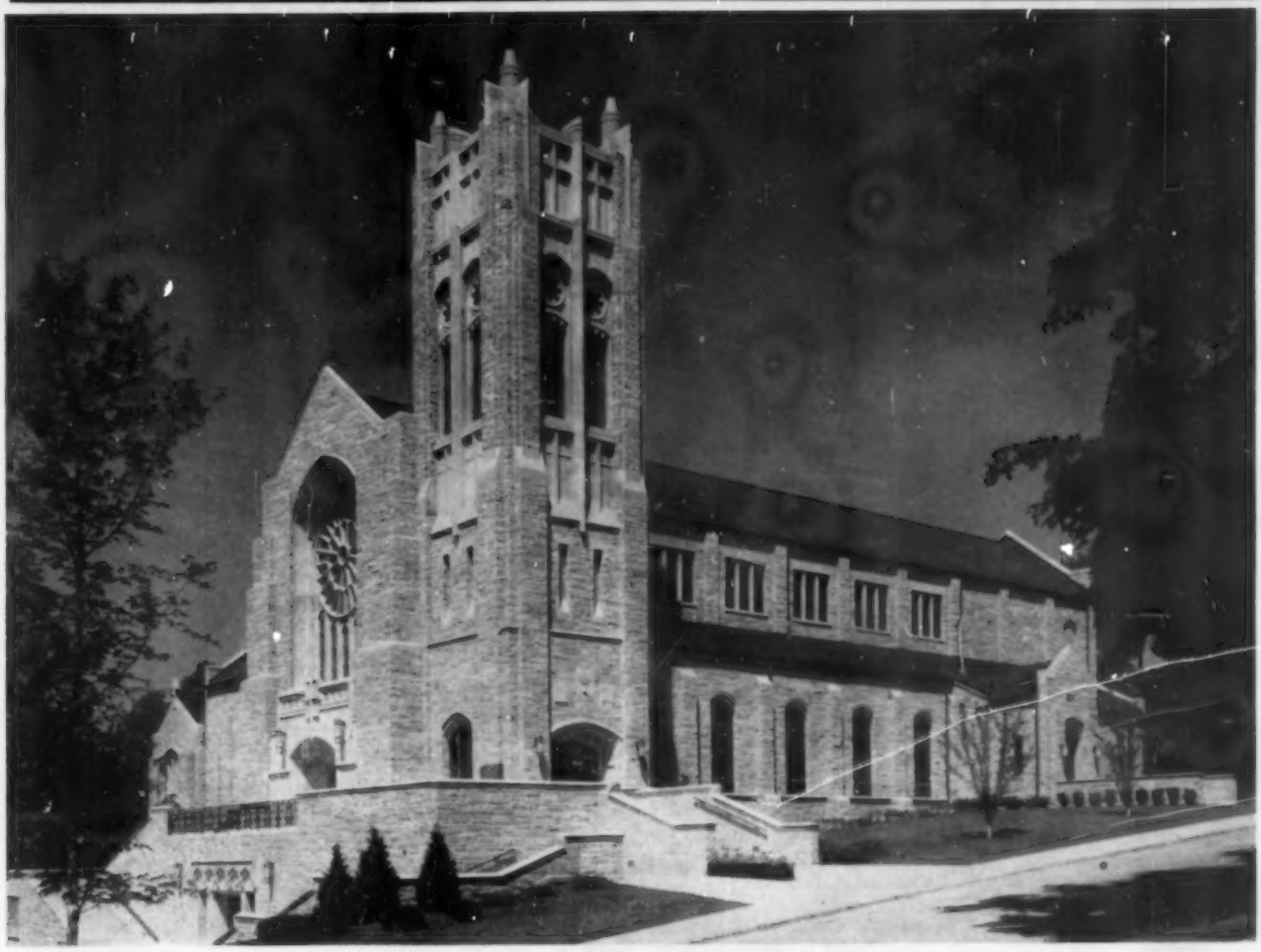

First Methodist Church, St. Charles, Ill. *Architects: Gray, Laz & Mall. Contractors: LaSalle Construction Co.*

THIS BEAUTIFUL CHURCH contains a variety of Hope's Steel Church Windows including shaped head windows.

Hope's Steel Church Windows offer the most satisfactory provision for the use of leaded art glass with or without protective exterior glazing. (Hope's method of double glazing permits glazing, or removal, of either interior or exterior glass without disturbing glass in opposite side.) Almost unlimited design possibilities allow the architect utmost freedom in layout of the glass areas. Ventilators may be located wherever desired. The great strength of these steel windows assures a long life with little maintenance required.

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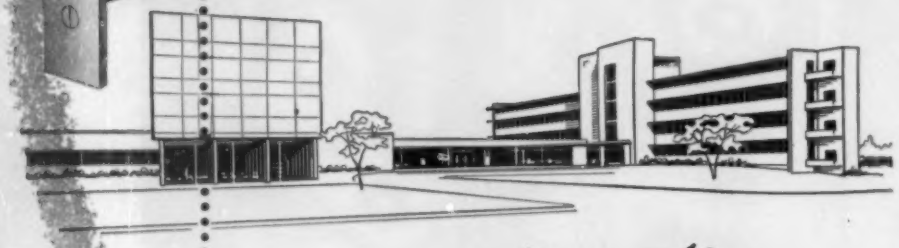

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Architects:
A. L. Aydelott and Associates, Memphis, Tenn.

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p/a reviews

inside handsome houses

Designs for Living: 175 Examples of Quality Home Interiors. *Katherine Morrow Ford and Thomas H. Creighton. Reinhold Publishing Corp., 430 Park Ave., New York 22, N. Y., 1955. 215 pp., illus., $5.95*

To put before the consumer the story of good interior design as conceived and executed by architects, few writers are better suited by their backgrounds than Thomas H. Creighton, P/A Editor, and Katherine Morrow Ford, who has been concerned with housing since 1930, has been associated with Knoll Associates and with *House & Garden*. These two architectural journalists have viewed at first hand the world's finest contemporary interiors, and across their desks has surely flowed the full stream of architectural interior design.

In selecting 175 examples of residential interiors, the authors have done a splendid job of winnowing, choosing to illustrate those interiors that express the most valid of contemporary design thinking. But it is not for this alone that they are to be congratulated. Truly noteworthy is their organization and presentation of their material in such a way as to be not only stimulating but also useful to the reader. Far too much material put before the consumer, intended to be "advisory" or "helpful," succeeds only in creating frustrated awe or an attitude of "a cat may look at a queen but what kitten can afford a golden throne." The Ford-Creighton book, on the contrary, while exposing to the reader the handsomest and most inviting work, accompanies its illustrations with text of such clarity, and with such well-made points that it simultaneously administers a practical course of education.

Without patronizing the reader, the authors explain in detail the "whys" of the interiors illustrated, so that none who studies this book can fail to come away with a wider understanding of what makes a good contemporary interior, together with a background method for applying this understanding to his individual needs and uses.

Diversified as are the room plans, the

materials, and the design thinking (providing the reader with a panoramic picture of the scope of today's architectural design developments), the reader can only assume a starving lack of available choice when it comes to furniture. It would not be fair to criticize the authors for this apparent paucity of good furniture. It is the architects themselves, though they are constantly introducing creative concepts to interiors as a whole, who resort to the monotonous repetition of the few chairs and tables that have become the clichés of the modern house. Perhaps it behooves the architect to stir himself a bit and examine some of the excellent newcomers to the furniture field, even though it is so much easier to fall back on the old reliables! In a volume that brings together so many contemporary interiors, this almost institutional standardization of furniture shows up as a glaring weakness in the architects' otherwise inventive approaches to interior design.

An unmistakable service to architects is a subtle by-product of the book, for by educating the reader to the architectural facts of life, the authors lay the groundwork for an easing in the designer-client relations. Since the informed client is the client who needs just that much less persuading, we would suggest giving this book to any stubborn client who might see things more your way if his own architectural horizons were somewhat broadened.

In a trenchant introduction, the authors outline and detail six basic criteria for the design of residential interiors today, which, even to the professional, might serve as a reminder of a desirable goal.

"If the interiors in your house (1) suit you and your needs, (2) are consistent and harmonious, (3) are related to the space you have to work with, (4) have character and integrity, (5) have the basic, timeless elements of good design, and (6) relate to one another—you don't need to worry about 'style.' You'll have a good contemporary design."

Chapters are devoted to Space Relationships, Halls and Stairways, Living

(Continued on page 188)

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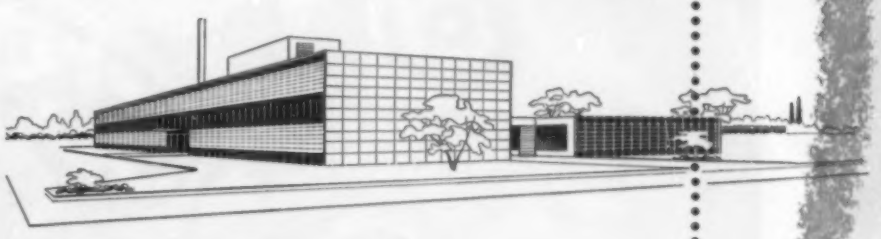

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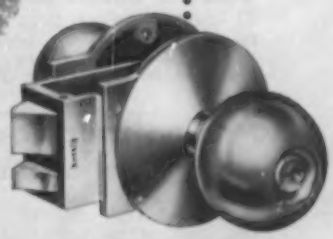
Yakima, Washington



*also RUSSWIN "UNILOCS"
Mono Design

Architects: Clarence Torsell A.I.A. and William Carr A.I.A.

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Quieter, more comfortable underfoot: Reduces classroom noise levels to a minimum. Teachers report much less fatigue than from hard, clattery tile.

Beautiful colors: Ranchtile comes in 2 design groups with 15 beautiful colors, clear and bright. Its beauty has made it a favorite for ranch-type homes all over the country.

Resists indentation: Ranchtile has exceptional resistance to permanent indentation from chairs and desks . . . and has amazing resistance to the abrasion of constant foot traffic.

Economical: The initial cost is less than that of most other floorings suitable for on-grade installation. Any difference in initial cost is more than compensated by the low maintenance cost and long life of Ranchtile.

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reviews

(Continued from page 185)

Rooms, Dining Spaces, Kitchens, Baths and Dressing Rooms, Bedrooms, Children's Rooms, Special Activities, Outdoor Living Spaces, Details. Each chapter illustrates examples of its subject with large clear photographs, plans, excellently detailed captions, and explanatory text.

Useful to the architect is a listing of the photographers whose work is shown, complete with addresses. An index of the architects and designers whose work is represented does its full share to emphasize to the consumer the names of these creative professionals, thus doing a fine job of public relations for the profession. Although intended primarily as a valuable guide to the literate consumer, *Designs for Living* deserves space in every architect's reference library as a comprehensive gallery of the best in contemporary, interior, residential design.

LOUISE SLOANE

conference summary

The Artist in Modern Society. *UNESCO. Columbia University Press, 2960 Broadway, New York 27, N. Y., 1954. 128 pp., $1*

This little book contains the General Statements and Final Reports prepared for The International Conference of Artists, held in Venice in 1952 at the invitation of UNESCO. The General Statements, largely devoted to the practical problems of the artist, were written by distinguished representatives of the Arts and include "The Architect and Contemporary Society" by Lucio Costa, "The Sculptor and Modern Society" by Henry Moore, and "The Painter's Rights in His Work" by Georges Rouault.

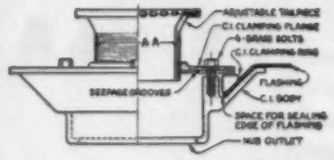
HEATH LICKLIDER

books received

Housing Design. Eugene Henry Klaber. Reinhold Publishing Corp., 430 Park Ave., New York 22, N.Y., 1954. 247 pp., illus., $8.50

The Grandeur That Was Rome. Giuseppe Gatteschi. Edited by Dr. G. Nicotra Di Leopoldo. Hastings House, 41 E. 50 St., New York 22, N.Y., 1954. 126 pp., illus., $5.50

It's Easy to Specify the Exact Drain for the Job!



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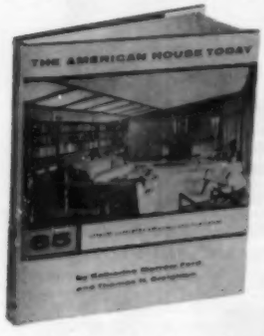

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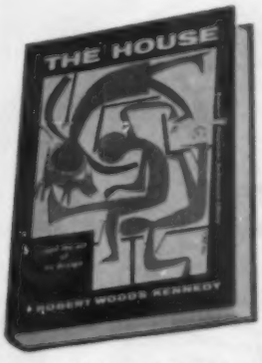

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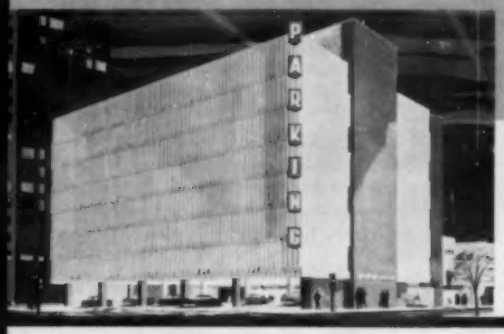

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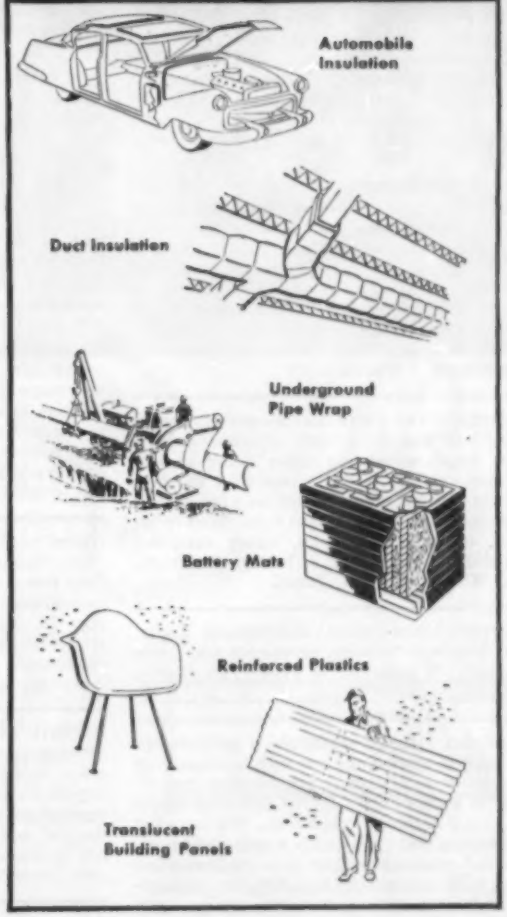

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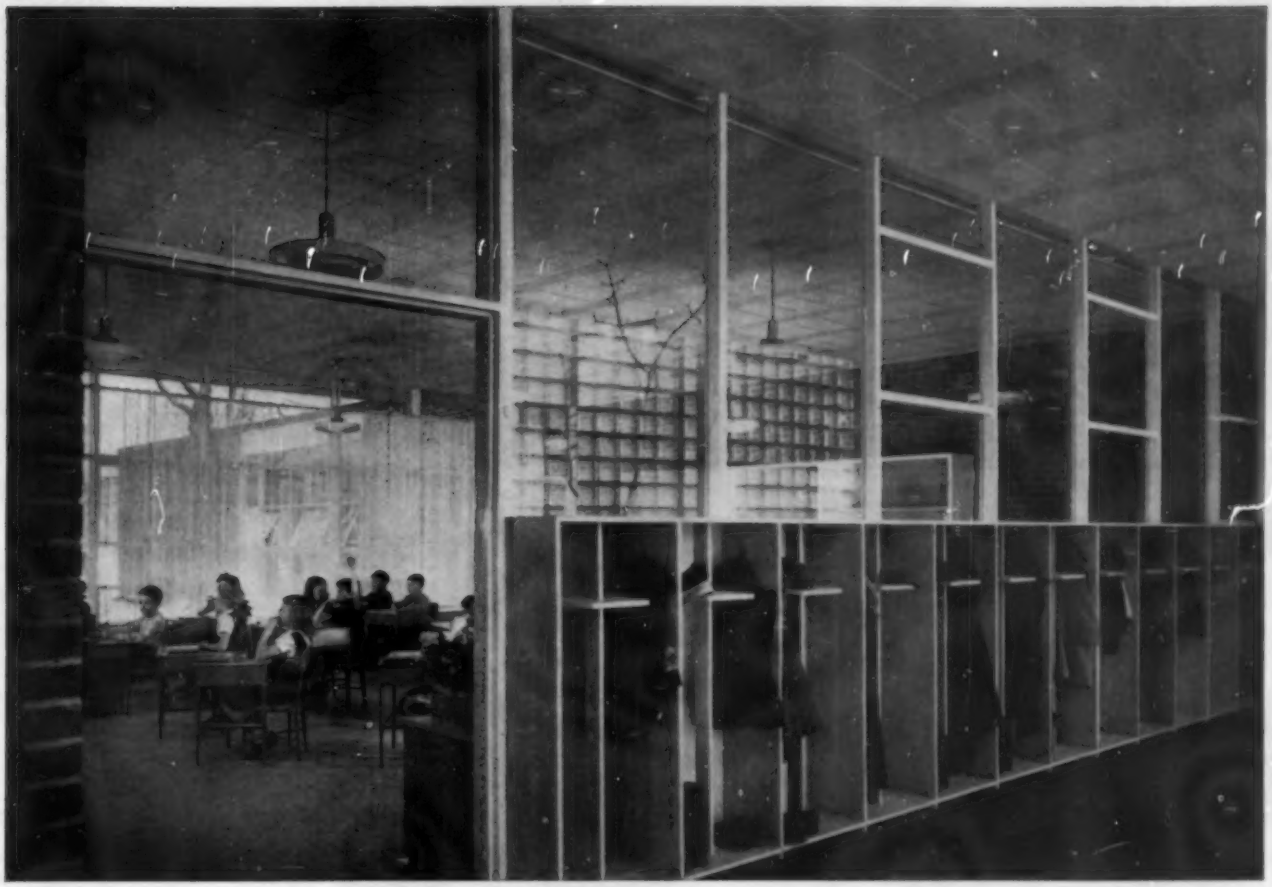

HOW STEEL JOISTS HELPED LOWER COSTS OF SCHOOL ADDITION AT DARIEN, CONN.

The new addition to the Holmes Elementary School in Darien, Conn., containing classrooms, a multi-purpose room and kitchen, is modern in every respect, but well-integrated in scale and materials with the older building. No additional ground was available for the new wing, but the architects were able to preserve most of the original play area and, by using large areas of glass, obtain maximum daylight for all rooms.

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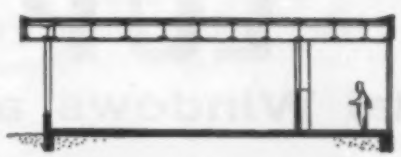

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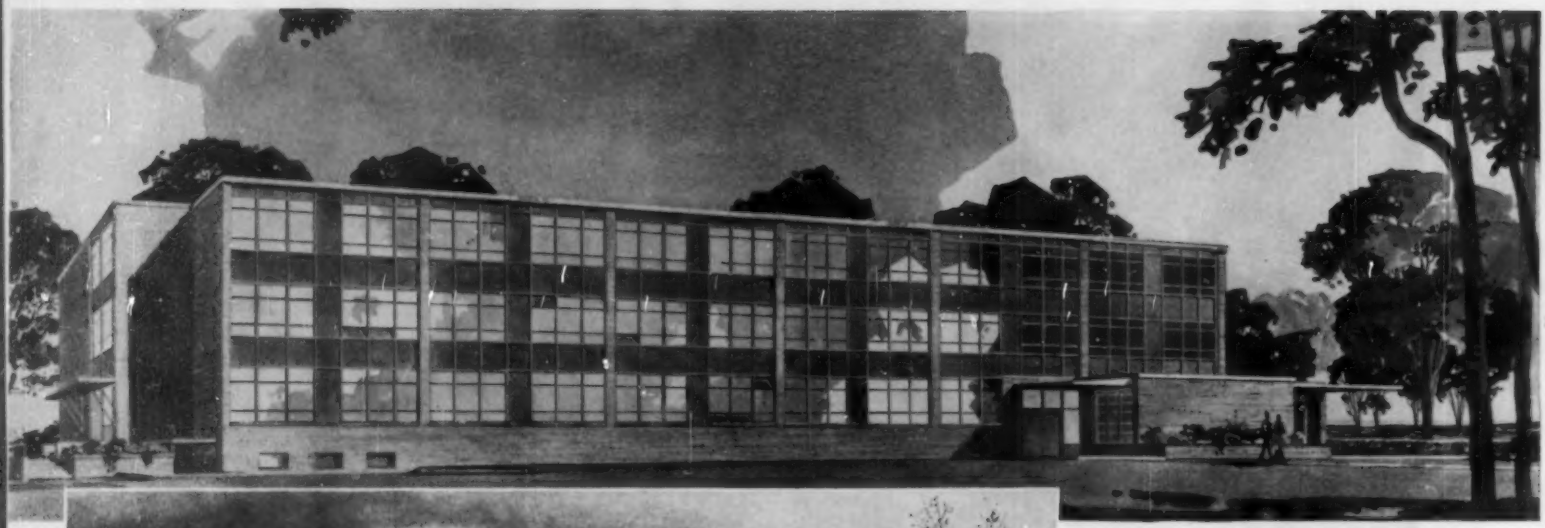

Top illustration, MEN'S DORMITORY, SOUTHERN STATE COLLEGE, Magnolia, Ark. Architects: Wittenberg, Deloney & Davidson, Little Rock, Ark. Contractors: Peterson, Garbi & Joseph, Inc. Lupton Curtain-Wall System, Type H. Module 3'8". Fixed glass and projected in-at-top ventilators. Outside glazed.

Lower illustration, Y.M.C.A. BUILDING, CHESTER, PA. Architects and Engineers: Howell Lewis Shay & Associates, Philadelphia. Contractors: Nason & Cullen, Inc. Lupton Curtain-Wall System, Type H. Module 3'. Projected out-at-bottom ventilators. Opaque and insulated panels with porcelain enamel facing.

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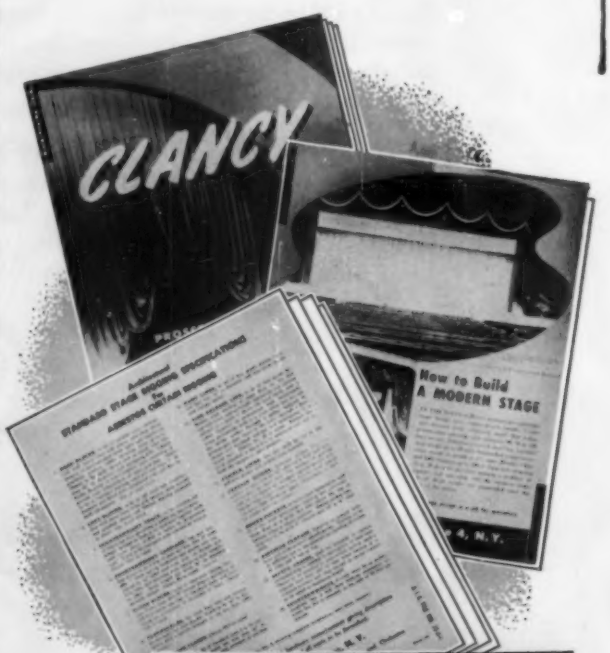

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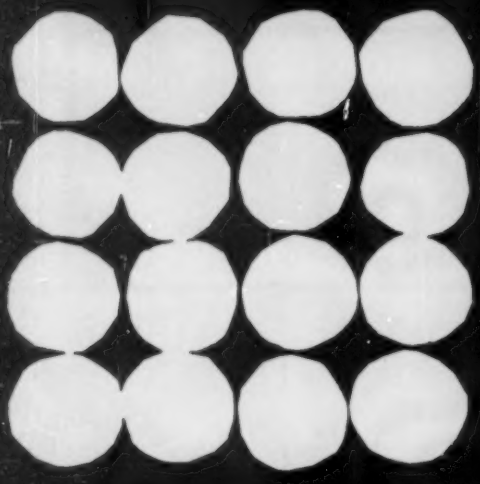

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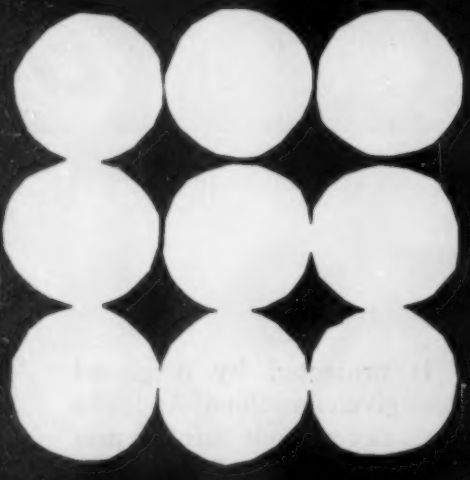

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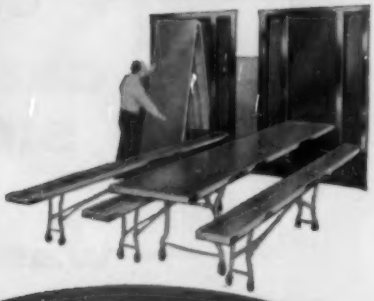

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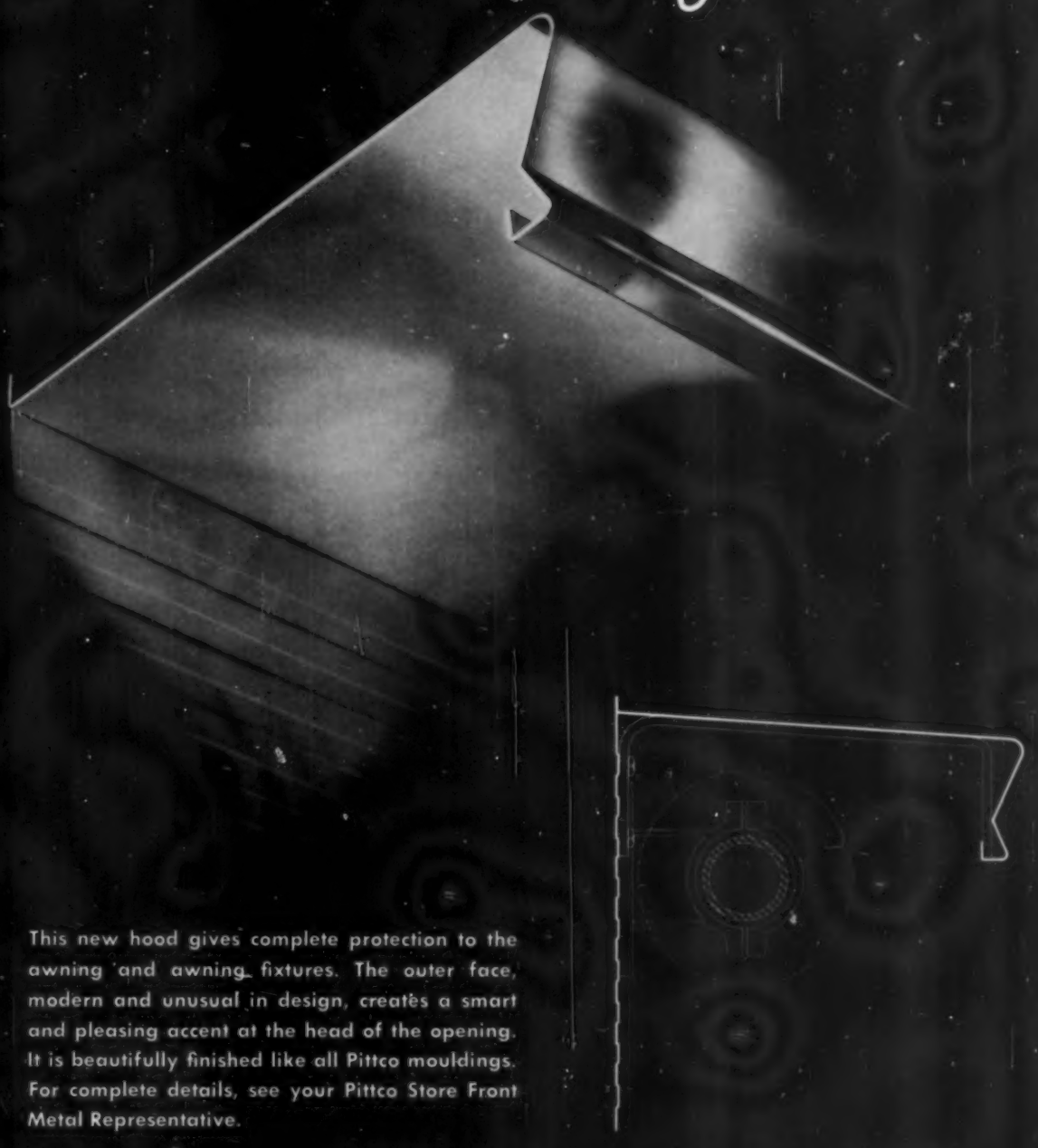

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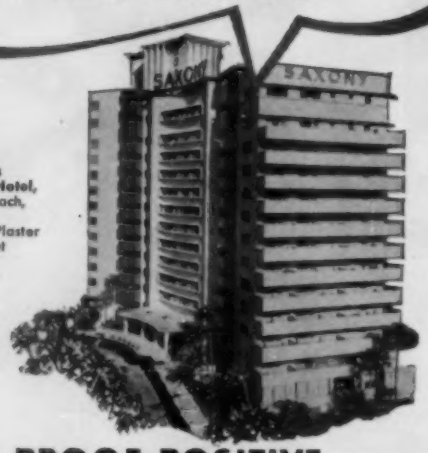

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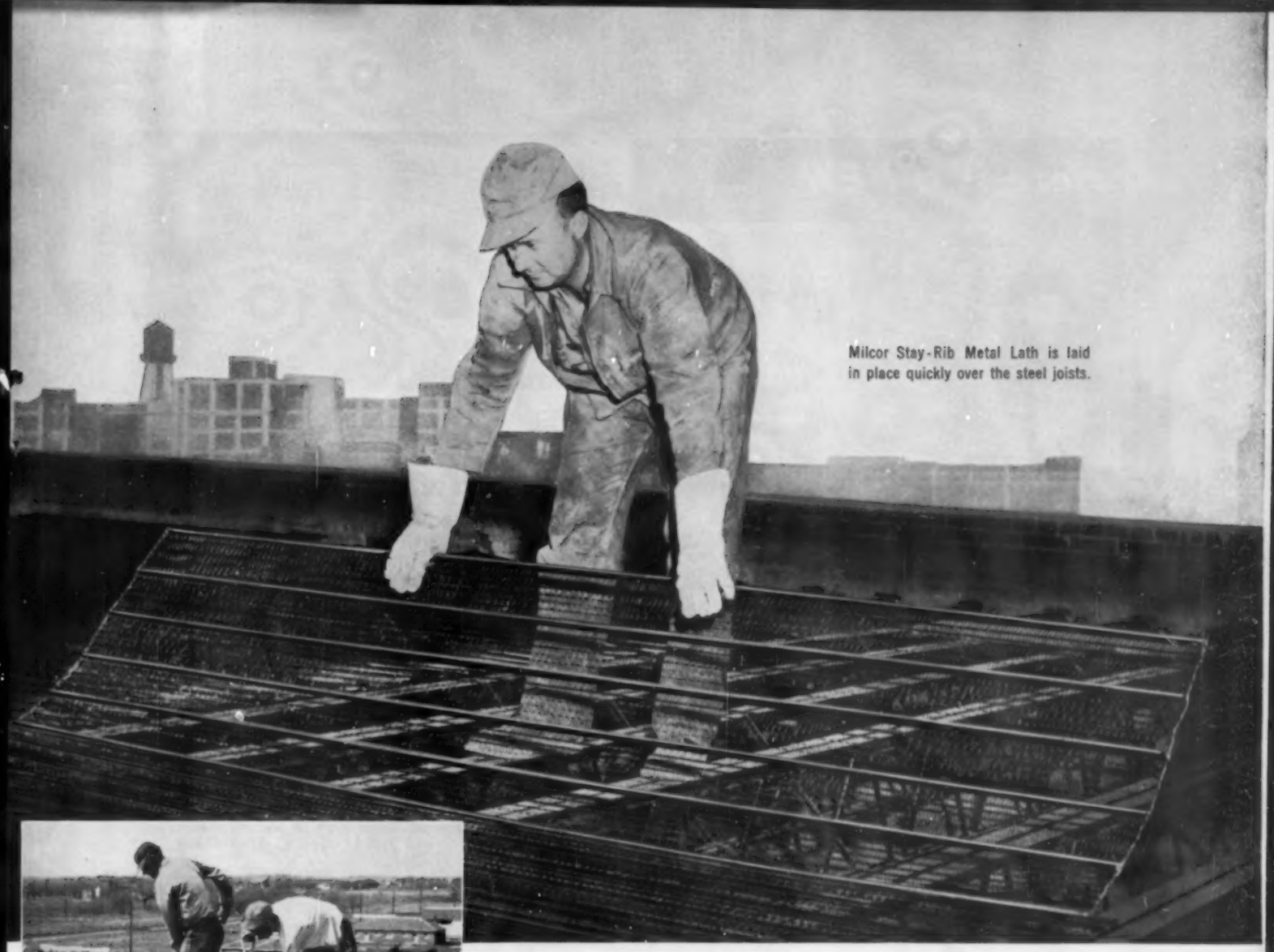

Milcor Stay-Rib Metal Lath is laid in place quickly over the steel joists.

ABOVE: Used as a form for short-span concrete slabs, 3/8 in. Milcor Stay-Rib No. 2 provides rigidity and does not depend on being stretched taut to carry wet concrete. BELOW: Underneath view shows how slab and steel joists are bonded together in a rigid floor system.

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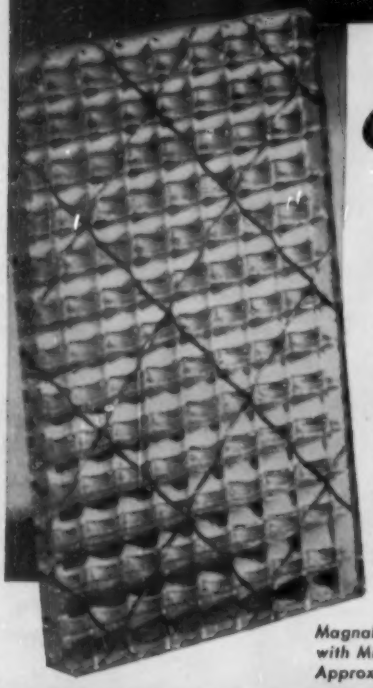

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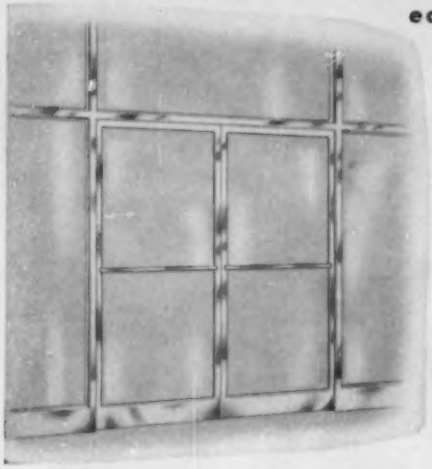

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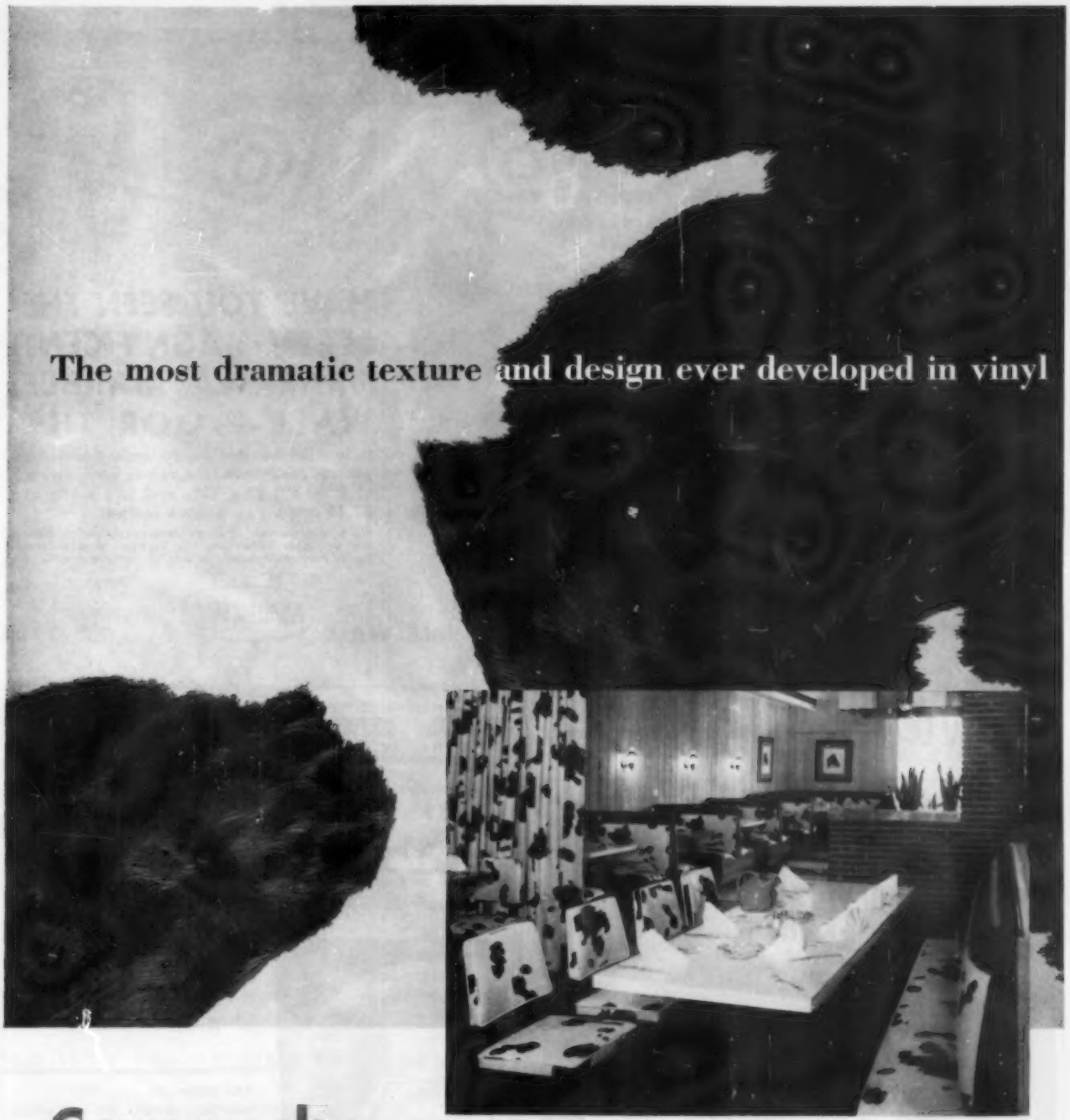

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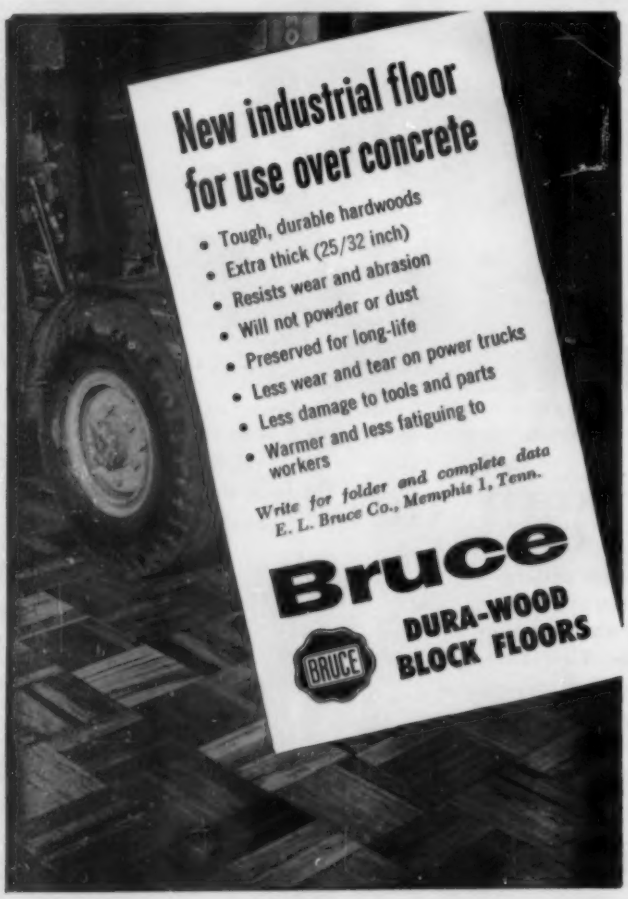
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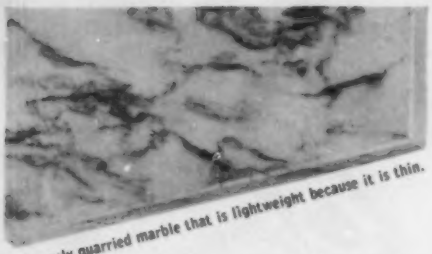

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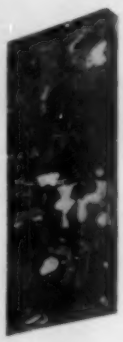

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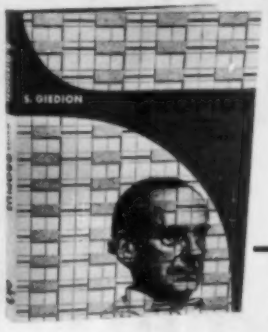

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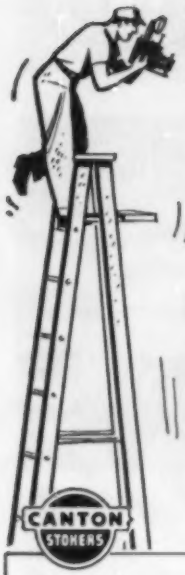

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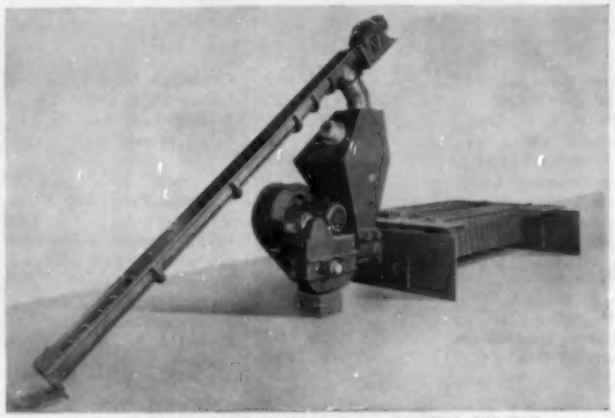

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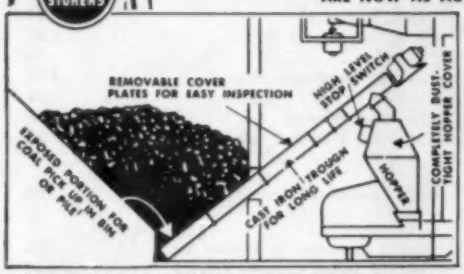
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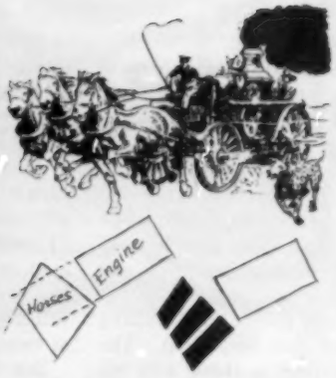

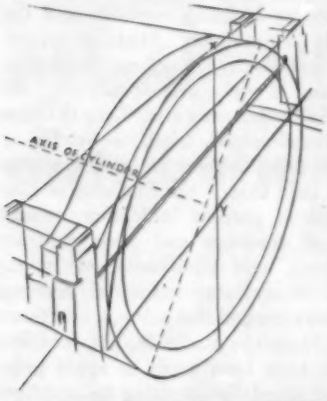

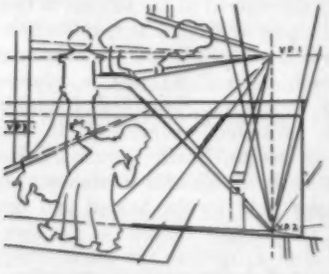

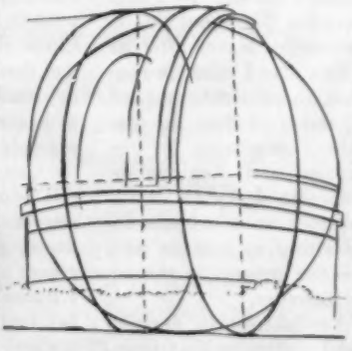

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P.S.

I wonder how many of you have ever truly appreciated the handsome drawings with which P/A is able to grace its pages, thanks to the unique ability of Elmer A. Bennett. I have just been O.K.'ing the page proofs of this issue, and I stopped, as I do every month, to admire Ben's remarkable work. Not only is it beautiful graphic presentation—whether he uses a straight edge or works free-hand, whether it is the controlled variation of a crow-quill, the sweep of a brush stroke, or the considered regularity of a ruling pen—it is *creative* drafting, in the best sense.

I wish some of you could see the material from which Bennett's SELECTED DETAIL drawings are sometimes made! From an often sketchy, incomplete architect's detail and a photograph (sometimes, I'm afraid, from very full details which do *not* agree with the results documented by the photograph) he selects, arranges, edits, decides on perspective, isometric, or straight orthographic representation, and then draws. Aside from the preliminary editing, I know of few draftsmen today who can do that final drawing part as well as Elmer Bennett.

In Texas recently I was talking to a group of architects about the quality of present-day drafting. From time to time I hear complaints of the inability of many recent graduates of good schools to draw well; and I am often surprised myself at the spotty level of competence in this elementary graphic tool among active practicing architects. I say *spotty* because I know some beautiful draftsmen, and I know some top-flight architects who just plain can't draw.

I have been inclined, up to now, to discount the criticism of drafting ability among those fresh from school. It has seemed to me, as I visit schools and see work done in some of the courses on graphics, that the instruction is better and the results at least as impressive as they used to be in "the good old days" that many of the critics look back to so fondly. But I'm frankly not sure any more. Recently several of the very best "progressive" architects have made this complaint. In fact, two people whose work I admire tremendously have made the same rather startling comment to me: that for the business of producing in the office crisp, clear, intelligible working drawings and details, they prefer to hire men trained in technical drafting schools rather than graduates of accredited architectural schools. They grant that these good but limited draftsmen will in most cases always remain draftsmen, while the B. Arch's and the M. Arch's will become the practicing architects of the future, even picking up drafting ability along the way. But, they ask, why in the world shouldn't drafting—that basic architectural method of expression, representation, explanation and documentation—be an elementary thing the architectural student learns, *along with* the other elements of the curriculum?

I agree with these people that drafting is that basic and that important. The ability of an architect to think with his pencil, to create with his pencil, and to explain with his pencil is such a characteristic of the species that it is ridiculous for the technical handling of that pencil to be crude. The lines it makes should be as expressive, as beautiful and as informative as possible.

As to whether that facility is less today than it was in preceding generations I'm not prepared to say. I would appreciate comments on the subject from those of you who are running drafting rooms. I will say this, as factual testimony: we receive in our editorial offices many more poorly drawn sets of drawings—both preliminaries and working drawings—than we do truly well-drawn ones. If anyone who has sent us material recently resents that testimony, he can assume, in the first place, that his are among the minority of good-drafting examples; and in the second place he is welcome to visit us and see for himself the average poor quality of graphic documents.

Once in a while I hear a schoolman say, in effect, "We aren't interested in training draftsmen; we are teaching deeper professional skills and abilities." While I admire the second part of this attitude, the first, I think, is nonsense. Not only is drafting the basic tool of the architect—draftsmanship is the beginning of the architect's career. To which my school man replies, "Yes, but this is something the apprentice learns *after* he leaves school." This also I think is nonsense. I feel that these teachers (and there must be a number of them, because the Report of the Commission for the Survey of Education and Registration speaks of "the definite decay in draftsmanship that plagues most schools today") confuse drafting as a trade with drafting as a creative process in the development of architecture.

If it is true that interest in drafting has "decayed" and ability in draftsmanship has deteriorated, this may explain the slowness of the architectural profession to *modernize* drafting methods. Perhaps too many of us look on graphic ability as something old-fashioned. We may be thinking of the beautiful ink tracings on cloth (neither presentation drawings nor working drawings, but a great satisfaction to the architectural office) where each egg and each dart in a reflected ceiling plan was drawn in beautiful detail. (I remember one ambidextrous draftsman in Schultze & Weaver's office whom we all admired because he could draw a full-size detail of a cartouche, both sides at once, with a pencil in each hand.)

But there is a whole new area of drafting ability almost unexplored. That is the fitting of graphic representation to contemporary building methods and the materials in use today. Modular co-ordination and the resultant method of dimensioning is one aspect of this new, unplowed field—but only one. Even that has been misunderstood, tried too briefly, or shrugged away by most architects' offices. Further than that is the business of simplification of graphic indication, co-ordination of drawings and other contract instruments, and elimination of redundancies. Many large industrial drafting rooms have studied this subject, and there is some literature available, but very few attempts have been made to apply principles of simplified drafting to architectural needs.

I refer the student of the subject to two sources: a pair of articles by Guy Rothenstein, which we published in February and March 1950 P/A; and a mimeographed brochure, *Simplified Drafting and the Architect*, published by the School of Design, North Carolina State College, as the result of a Conference on the subject held by the School and the North Carolina AIA Chapter in January, 1954. Jimmy Fitzgibbon ran the meeting, and prepared the report.

However, this new approach to drafting which is possible does not eliminate the need to draw *well*. And to come back to Elmer Bennett, and the tremendous lift I feel that his drawings give our pages, his approach *is* that of simplification—along with great techno-artistic ability. As an example, I refer you to his drawings of the Candela Warehouse, pages 114-115 of this issue. Have any of you ever seen as simple, definitive, direct and handsome drawings issue from an architect's or engineer's office as working documents? I haven't, and the fact that I haven't reinforces my belief that we are losing an art which should be most important to us.

Thomas H. Creighton

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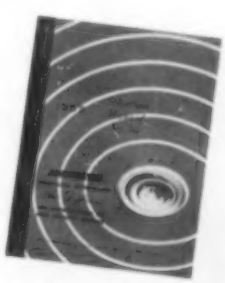

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